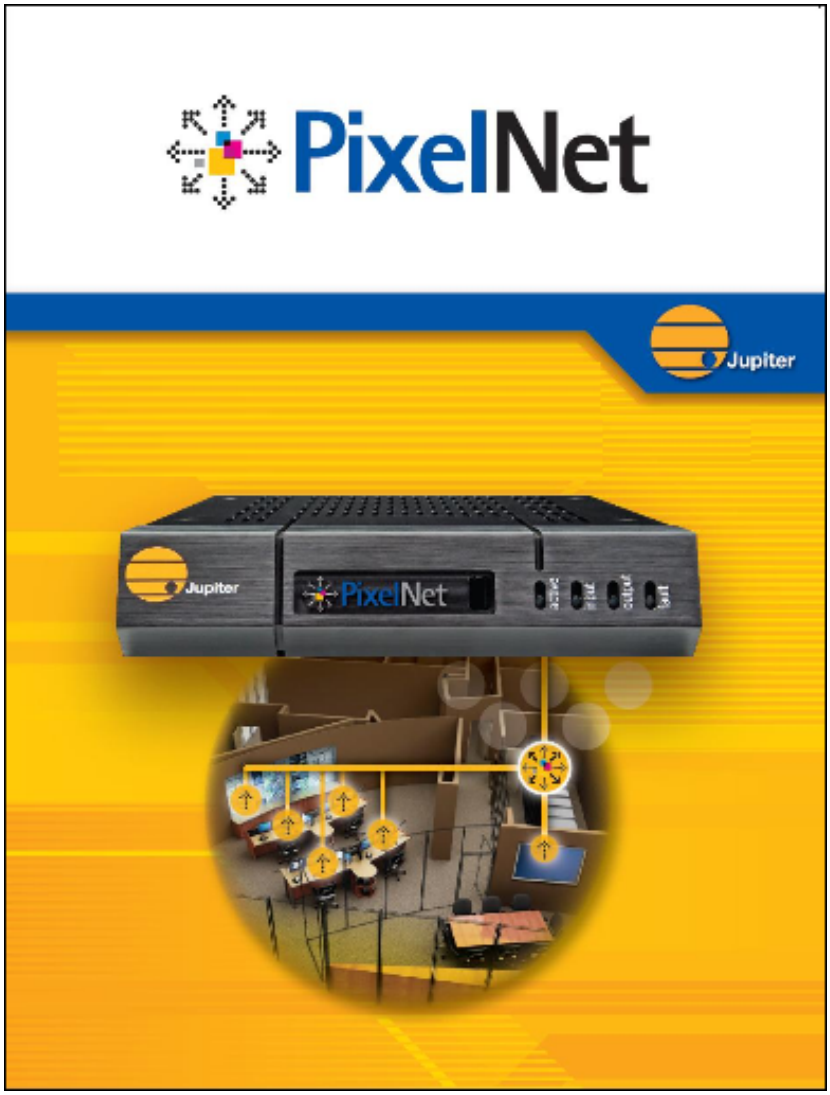
Jupiter Systems

PixelNet Domain Control
User Manual

Version 1.1



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Warranty

Statement of Limited Warranty

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Using this Manual

Using this Manual

Introduction

Chapter titles are at the top of every page to assist you in finding sections.

The Table of Contents is a section, chapter, and heading outline of the manual; whereas, the comprehensive index at the end of the manual guides you through a search of subjects, figures, and tables.

Note and Caution

This manual uses two special entries to get your attention:

- Note
- Caution

These entries are listed in their ascending order of importance. The examples shown are found throughout this manual.

Note	Notes are entries that bring your attention to specific items that you must see, read, and understand before continuing.

Caution	Cautions are entries that alert you to items that may cause the operating system to not operate properly. For instance, tasks that were either done out of sequence or not supposed to be done at all may cause the system to malfunction. Cautions also alert you about physical connections that can cause the system to not operate properly.

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Chapter 1—Introduction to PixelNet

1. Introduction to PixelNet

PixelNet offers a new and revolutionary way to capture, distribute, display, and control digital and analog video streams. PixelNet input nodes capture a wide variety of source signals and output nodes display them simultaneously on a single display or display wall.

1—Introduction to PixelNet

The PixelNet distributed node system is one of the chief advantages of using individual input and output nodes. This distributed node system allows installation of nodes at the signal source and/or display device. This distributed network system allows for simple Cat 6 cabling between sources, displays, and the PixelNet Switch rather than expensive analog or digital cables.

Based on a switched, proprietary network, PixelNet consists of input nodes and output nodes that connect through a PixelNet Switch to a display wall via standard Cat 6 network cabling. PixelNet makes creating complex topologies of inputs, outputs, and display walls simple, inexpensive, and future proof.

PixelNet has the ability to capture the wide variety of source signals found within a control room, and display them simultaneously on a display wall, ancillary displays, even across multiple rooms. Based on standard Cat 6 cabling, PixelNet input and output nodes can be placed as far as 100m from a PixelNet Switch. A PixelNet network automatically configures in the field, every input node is visible to each output node.

All of this power and flexibility is managed by Jupiter's PixelNet Domain Control (PDC) software, providing an intuitive, object-oriented, drag-and-drop interface to control and manage multiple inputs, outputs and display walls.

Key Terms

Node - An active electronic device that is attached to a network, and is capable of sending, receiving, or forwarding information over, to, or from that network.

PixelNet Domain – An interconnected set of switches and PixelNet nodes creating a non-blocking set of gigabit ports to which the PixelNet nodes are connected. Organized and managed via PixelNet Domain Control software.

Non-Blocking – The non-blocking PixelNet switch provides for switching such that multiple paths through the switch do not affect each other nor any other path in the switch. Full bandwidth is always realized through the switch.

1.1 Outstanding Visual Quality

PixelNet captures video signals at full resolution, frame rate, and color depth assuring exceptional visual performance.

Format conversion, de-interlacing, scaling, noise-reduction and color-space conversion are all performed automatically for the user within PixelNet – resulting in perfect representation regardless of input signal or display device.

PixelNet's output node, TeamMate, can display a single or multiple sources in freely scalable windows, or multiple TeamMate nodes can be combined together to create a display wall of virtually any size with source windows being able to span one or all displays. All TeamMate nodes connected to PixelNet have access to all connected inputs.

1.2 The PixelNet Difference

The PixelNet Network is a high-bandwidth, non-blocking switched network. Data transmission from one PixelNet node to another is completely independent of other communicating nodes. Networks are automatically self-organizing, and PixelNet nodes exchange visual data in a common, digital format. Nodes have very long Mean Time Between Failure (MTBF). A failed node can easily be replaced.

All connections between nodes and switches are made using common Cat 6 cables up to 100 meters in length. PixelNet is completely digital in nature, and with digital input sources such as a DVI computer source or SDI video, the network can be digital end-to-end, resulting in the best possible visual performance. Video signals are enhanced through the use of superior video processing technology for de-interlacing and anti-aliasing. The result is a broadcast-quality display. Any application will benefit from the simple installation and superb visual performance of a PixelNet network.

1.3 Multiple Wall Support

With PixelNet, it is now possible to manage multiple displays in widely separated locations, and to control them independently. This new feature expands the boundaries of any given PixelNet domain and can include many display walls. Content is no longer confined to a single display wall; it can now be presented in more than one place on a variety of display types.

1.4 Window Borders and Titles

PixelNet now offers options to apply colored borders to any window on the display wall and add titles to the borders using a text editor. Window layouts can be saved and instantly recalled on the wall, including the borders and titles.

1.5 Nodes

1.5.1 DVI-I Input Node

Jupiter Systems designed the DVI-I Input Node to capture analog (RGB) and digital progressive scan (DVI) signals from graphical outputs of other computers. Resolutions up to 2048 x 1200 and a pixel clock up to 165 MHz are supported.

The DVI-I input node supports analog and digital loop-through from the source to a display or another input node. The DVI-I input node automatically detects incoming signal formats for plug-and-play simplicity. Each input node contains two gigabit PixelNet ports.

1.5.2 HD Component Input Node

The HD Component Input Node is designed to capture incoming SDTV (NTSC/PAL/SECAM) and HDTV (ATSC) signals, and accepts analog component inputs (YPrPb). This is an audio-capable input node that supports stereo and 5.1 encoding formats: 48KHz, 44.1KHz, 24bit.

The HD Component input node automatically detects incoming signal formats for plug-and-play simplicity. Each input node contains two gigabit PixelNet Ports.

1.5.3 3G-SDI Input Node

The 3G-SDI Input Node is designed to support 3G-, HD-, and SD-SDI signals—3G (1080 p), HD (720 p, 1080i), and SD (480 i/p, 576 i/p)—at 50 or 60 fps. This is an audio-capable input node that supports stereo and 5.1 encoding formats: 48KHz, 44.1KHz, 24bit.

The 3G-SDI input node provides SDI signal loop-through and 10-bit color processing. Similar to the other input nodes, the 3G-SDI input node automatically detects incoming signal formats for plug-and-play simplicity. Each input node contains two gigabit PixelNet Ports.

1.5.4 Quad CVBS-Y/C Input Node

The Quad Composite Video Broadcast Standard and S-Video (CVBS-Y/C) Input Node is designed to support SD signals—SD (480 i, 576 i)—at 25 or 30 fps. This input node handles NTSC/PAL/SECAM composite and S-Video signals. This node allows for four channels to be processed simultaneously.

1.5.5 TeamMate Output Node

Jupiter Systems designed the TeamMate Output Node to provide DVI and analog display signals to graphical display devices (such as flat-panels, projectors, cubes, etc.) Resolutions up to 2048 x 1200 and a pixel clock up to 165 MHz are supported.

The TeamMate output node provides for an optional FrameLock, wherein all output nodes are connected to a single SYNC signal. In a display wall environment, there will be one master SYNC output node supplying the SYNC signal to all other output nodes. Each output node contains two gigabit PixelNet Ports.

1.5.6 Audio Output Node

The PixelNet Audio output node routes audio associated with video data captured at audio-capable PixelNet input nodes (the 3G-SDI and HD Component input nodes). Audio configurations are saved as part of PixelNet Domain Control layouts and are automatically recalled when the associated layout is selected. Unlike other solutions, PixelNet users will be able to both see and hear a source, managing the two capabilities through a drag-and-drop interface.

Digital audio can be transferred optically over fiber optic TOSLINK (Toshiba LINK) F05 connectors or Bayonet Neill-Concelman (BNC) 75 Ohm coax cables can be used. Also, the AES-3id standard is supported.

1.6 PixelNet Switches

Each PixelNet Network requires the use of at least one 48-port PixelNet Switch. PixelNet switches are based on a proprietary switching network and can not be used within a standard Ethernet network.

1.7 PixelNet Domain

A PixelNet Domain is a network configuration that consists of a combination of input nodes, output nodes, one or more PixelNet switches, and a PixelNet Domain Server running PixelNet Control Software.

1.8 PixelNet Domain Server

In order to run the PixelNet Domain Control Software, the PixelNet Domain Server requires a dedicated gigabit Ethernet port with jumbo packet support. Furthermore, all of the items shown in the **Connection Properties** list must be disabled (unchecked), before using the Server.

Chapter 2—PixelNet Hardware

2. PixelNet Hardware

2.1 Hardware Overview

This chapter describes the hardware characteristics of the PixelNet DVI-I input node (**“Figure 1”**), the PixelNet HD Component input node (**“Figure 2”**), PixelNet 3G-SDI input node (**“Figure 3” on page 8**), Quad CVBS-Y/C input node (**“Figure 4” on page 8**), PixelNet output node (**“Figure 5” on page 8**), and the 48-port PixelNet Switch (**“Figure 15” on page 19**).

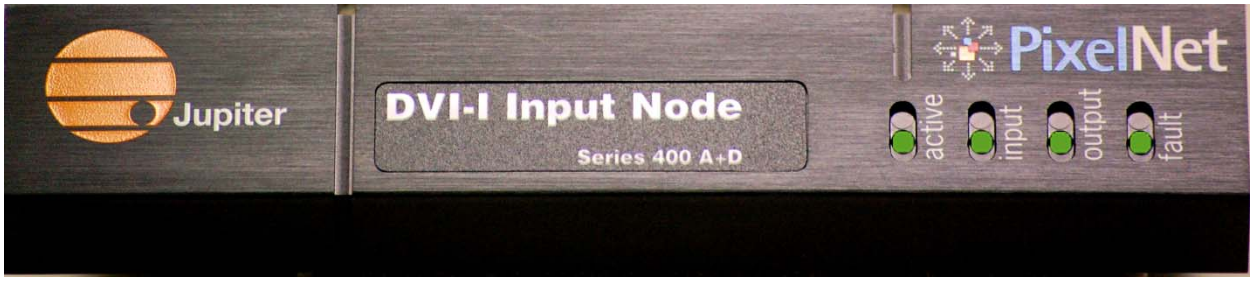


Figure 1 - PixelNet DVI-I Input Node Front Panel

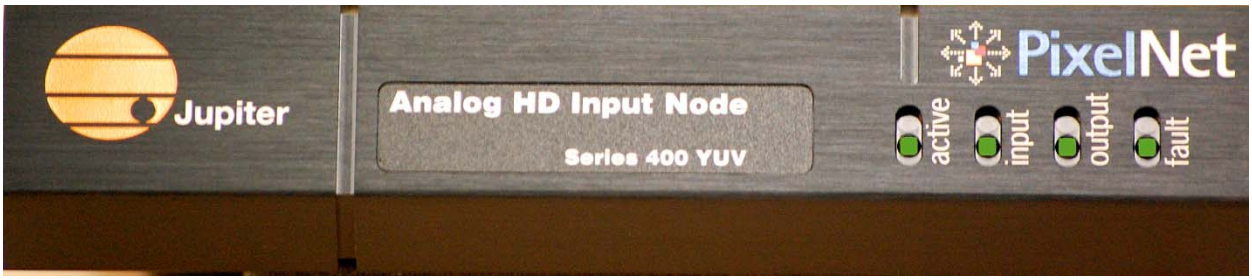


Figure 2 - PixelNet HD Component Input Node Front Panel

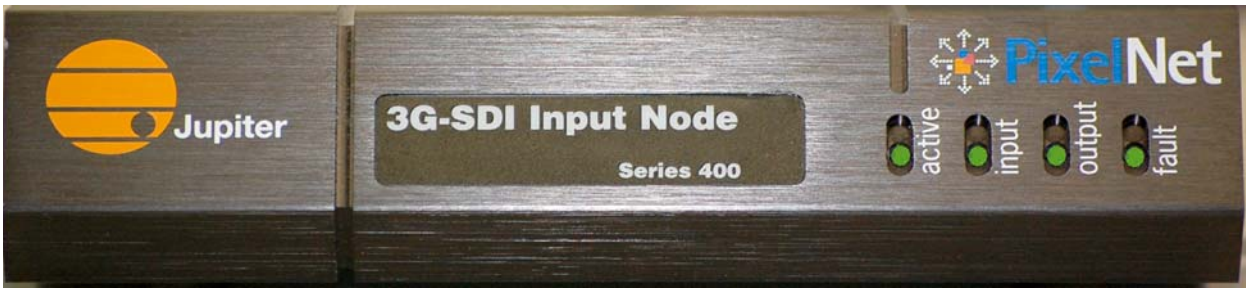


Figure 3 - PixelNet 3G-SDI Input Node Front Panel

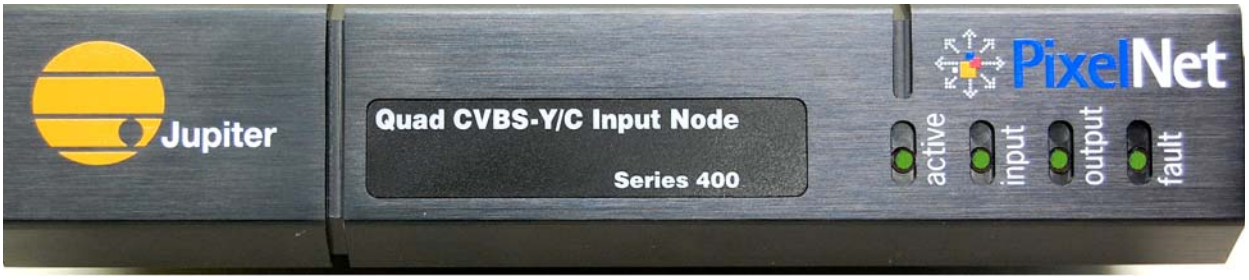


Figure 4 - PixelNet Quad SD Input Node Front Panel

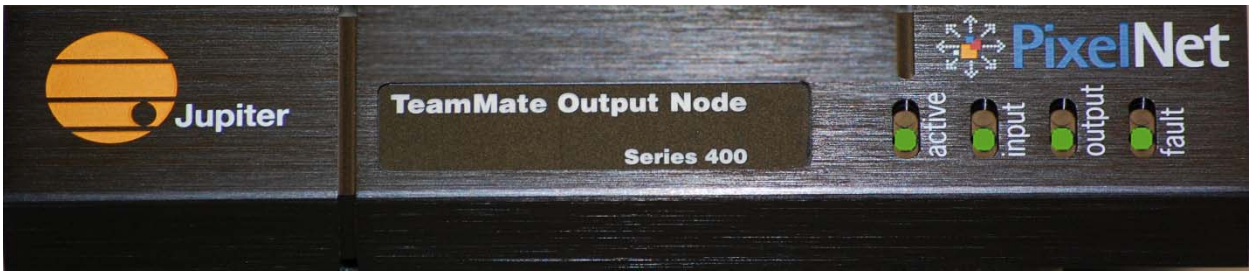


Figure 5 - PixelNet Output Node Front Panel

Figure 6 - PixelNet Audio Output Node Front Panel

2.1.1 LED Behavior

The PixelNet nodes contain four LEDs—Active, Input, Output, and Fault. The Active, Input, and Output LEDs must be interpreted in conjunction with the Fault LED color.

2.1.1.1 Fault LED

The Fault LED colors (red, yellow, and green) indicate the node's functional status through its Power-up, Operational, and Fault modes.

Power-up Mode
As the node powers-up, the Fault LED remains yellow. If the Fault LED turns red, the node is experiencing internal or power problems. During startup the active, input, and output LEDs will flash through different colors.

Operational Mode
Once the power-up is complete, the node is in operating mode. The Fault LED turns green.

Fault Mode
When the Fault LED is red, the node is not functioning and is in a fault mode. Attempt a power-cycle of the node; if Fault LED is still red, contact Jupiter **Technical Support** for assistance.

2.1.1.2 Active, Input, and Output LEDs

When the Fault LED is Red:
The Active, Input, and Output LEDs will show a specific static display of red, yellow, green, and off. You should make a note of this LED display sequence and call Jupiter **Technical Support** so that we can decipher the Fault code and resolve the issue.

When the Fault LED is Yellow:
The Active, Input, and Output LEDs will show a combination of LED displays while the node is in the process of powering up.

Note So far, the LED behavior has been the same for both the Input and Output nodes. However, when the Fault LED is green the LED behavior changes depending on whether it is an Input or Output node.

When the Fault LED is Green:
In an input node:

- The Input LED is green when it has a valid signal, or yellow if the source is not detected.
- The Active LED is green when actively processing data or yellow when idle.
- The Output LED is green when it is sending packets (a data stream) or yellow when idle.

In an output node:

- The Output LED is green when it is connected to a display device
- The Active LED is green when actively processing data or yellow when idle.
- The Input LED is green when it is receiving packets (a data stream) or yellow when idle.

2.2 HD Component Input Node

- Supports SDTV (NTSC/PAL/SECAM) and HDTV (NTSC)
- Provides analog component inputs (YPrPb)
- Provides automatic format detection for plug-and-play simplicity
- Provides two gigabit PixelNet ports

Figure 7 - HD Input Node Rear View

2.3 DVI Input Node

- Captures signals up to 2048 x 1200 resolution and up to 165 MHz pixel rate
- Captures analog or digital progressive scan signals
- Supports analog-to-analog and digital-to-digital loop-through
- Provides choice of external (loop-through) or internal EDID
- Provides automatic format detection for plug-and-play simplicity
- Provides two gigabit PixelNet ports

"Figure 8" on page 12 shows the rear panel of the DVI input node. Cable connections are also indicated in the figure. Note that the USB port is reserved for future capabilities. The node is also capable of providing a duplicate of the input signal. The signal type presented at the SIGNAL IN connector DVI-I (DVI-D or analog RGB) will be duplicated at the SIGNAL OUT connector, i.e. analog-to-analog or digital-to-digital. This allows a monitor connected to the SIGNAL OUT connector to receive the same signals present at the SIGNAL IN.

DVI-I Input | **EDID Switch** | **DVI-I Input** | **USB not currently supported** | **PixelNet Port 1** | **PixelNet Port 2** | **Power**

Figure 8 - DVI Input Node View

2.3.1 EDID Switch

Display Data Channel (DDC) is a communication standard used by graphics channels of PCs to talk to monitors. The DDC uses the Extended Display Identification Data (EDID) to find out information about what the system supports regarding preferred resolution and color depth.

The EDID Switch allows two settings, left and right, the operation of the DVI-I input node depends on the following criteria:

- When a monitor is connected to Signal Out (with the switch to the left towards the monitor icon), the PC connected to the Signal In connector requests the monitor for the EDID table and verifies the information so that an acceptable resolution value is used by the PC. This resolution will also be used by the DVI-I input node.
- With the switch to the right towards the crossed-out monitor icon, the PC connects to an internal chip in the node with a built-in EDID table to get information about the maximum resolution that the node will support.

2.4 3G-SDI Input Node

- Supports 3G-, HD-, and SD-SDI signals:
  - 3G (1080 p), HD (720 p, 1080 i), and SD (480 i/p, 576 i/p)—at 50 or 60 fps
  - Handles SMPTE 424M-A, SMPTE 292M, and SMPTE 259M (NTSC/PAL) signals
- Supports automatic format detection for plug-and-play simplicity
- Provides SDI signal loop-through
- Provides 10 bit color processing
- Provides two gigabit PixelNet ports

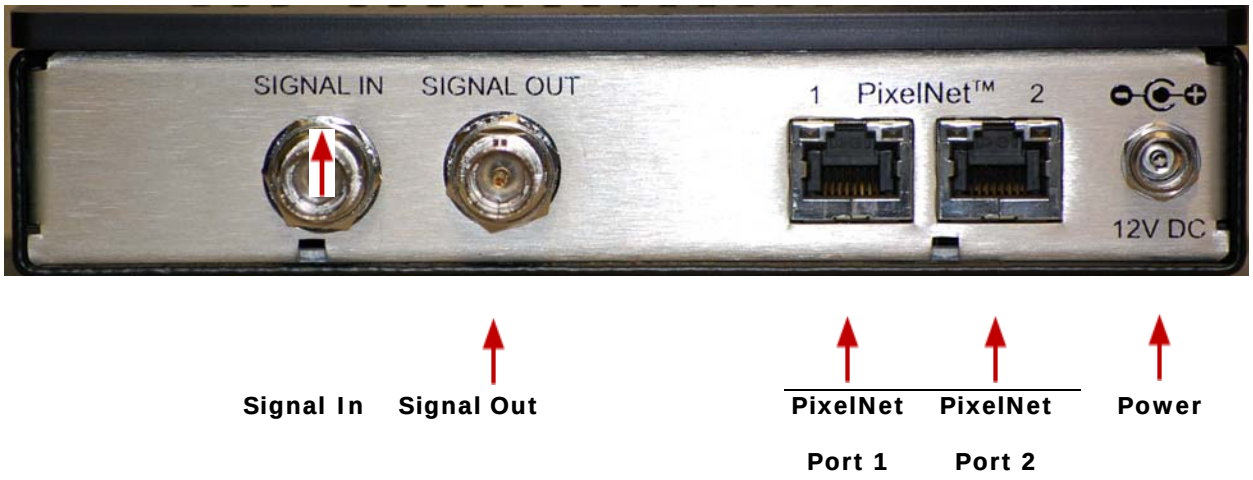


Figure 9 - PixelNet 3G-SDI Input Node Rear View

"Figure 9" on page 13 shows the rear panel of the 3G-SDI input node. Cable connections are also indicated in the figure. The 3G-SDI input node also provides loop through output. The signal type presented at the SIGNAL IN connector will be duplicated at the SIGNAL OUT connector.

2.5 Quad CVBS-Y/C Input Node

- Supports SD signals:
  - SD (480 i, 576 i)—at 25 or 30 fps
  - Handles NTSC/PAL/SECAM components, and S-Video signals
- Supports automatic format detection for plug-and-play simplicity
- Provides 8-bit 4:2:2 color processing
- Provides two gigabit PixelNet ports

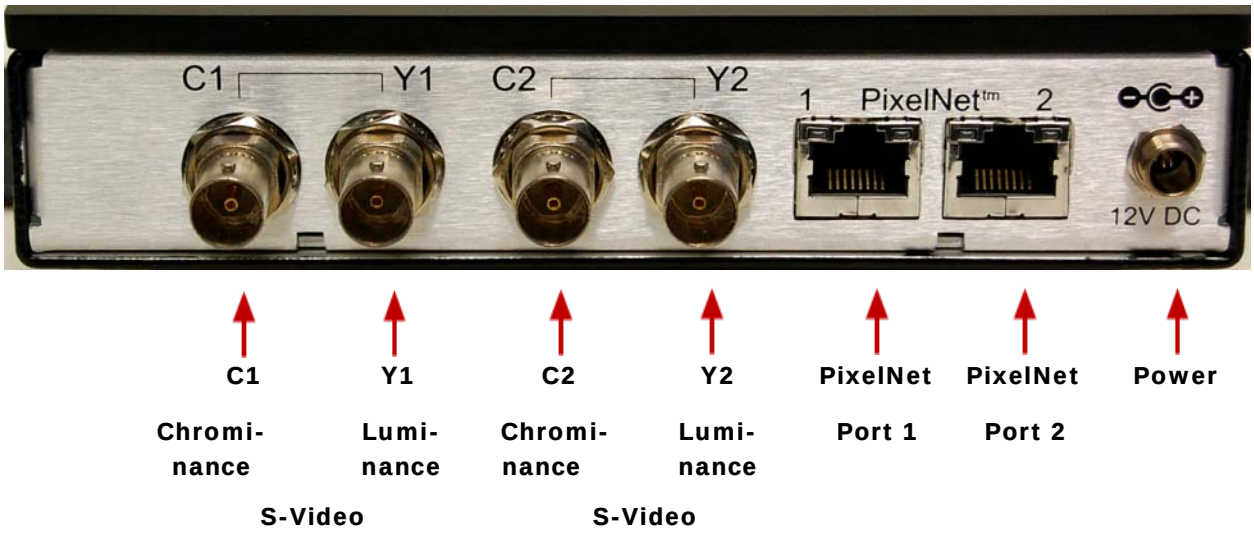


Figure 10 - Quad CVBS-Y/C Input Node Rear View

"Figure 10" on page 14 shows the rear panel of the Quad-CVBS-Y/C input node. This node allows for four channels (combination of composite or S-Video signals) to be processed simultaneously. Cable connections are indicated in the figure; either up to two S-Video (YC1 and YC2) or up to four composite (1, 2, 3, and 4). When an S-Video signal is connected, the corresponding composite capability is removed, for instance, using Y1 and C1 disables composite 1 and 2.

2.6 TeamMate Output Node

- Supports DVI or Analog display outputs
- Supports output resolutions up to 2048 x 1200 or 165 MHz pixel clock
- Provides two gigabit PixelNet ports
- Provides optional FrameLock, connecting all output nodes to a single SYNC signal

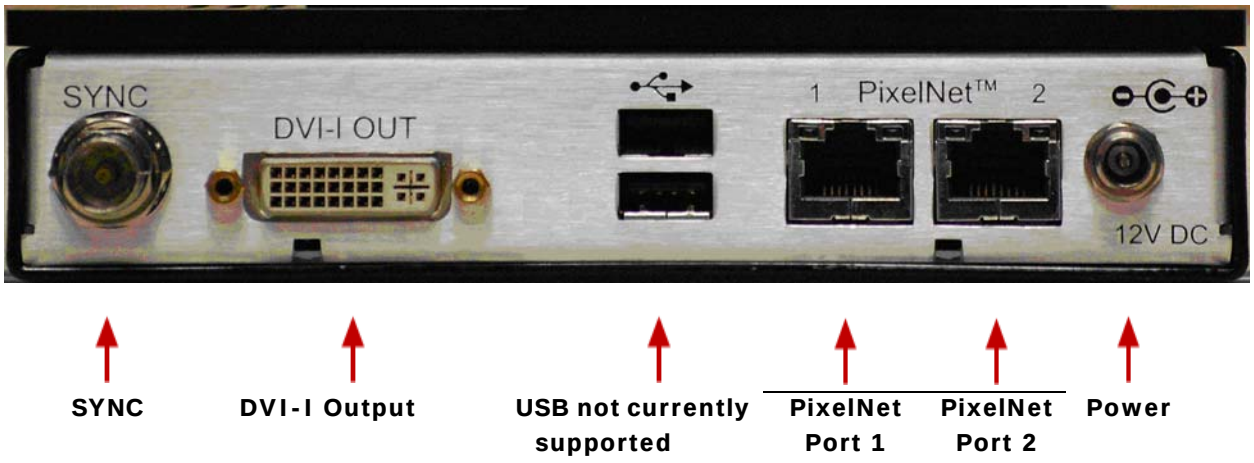


Figure 11 - PixelNet Output Node Rear View

2.6.1 SYNC Port

The output node sync port provides for synchronizing all output node signals to the displays. Use this if you want all the output nodes in your configuration to be tied to a single sync signal. Synchronization allows for full motion video with no tearing of image at display boundaries.

The first output node of a display wall will be configured as a master; by default, all the other nodes will be configured as slaves. The master output node is configured with the PixelNet Domain Control software.

2.6.1.1 Distribution Amplifier (DA)

Up to ten output nodes can be used in a simple configuration—one master, nine slaves. More complex systems with more than ten output nodes are possible with a high-bandwidth Distribution Amplifier (DA). Each DA port can support up to ten output nodes. Also, more than one DA can be daisy-chained from the first DA. The DA is available as a PixelNet option.

The following figure shows the basic daisy-chain connections for the Sync Port. Every node requires a T-Connector. Every branch of the T-Connector will be connected. Each end of the daisy-chain has a 75 Ohm terminator attached.

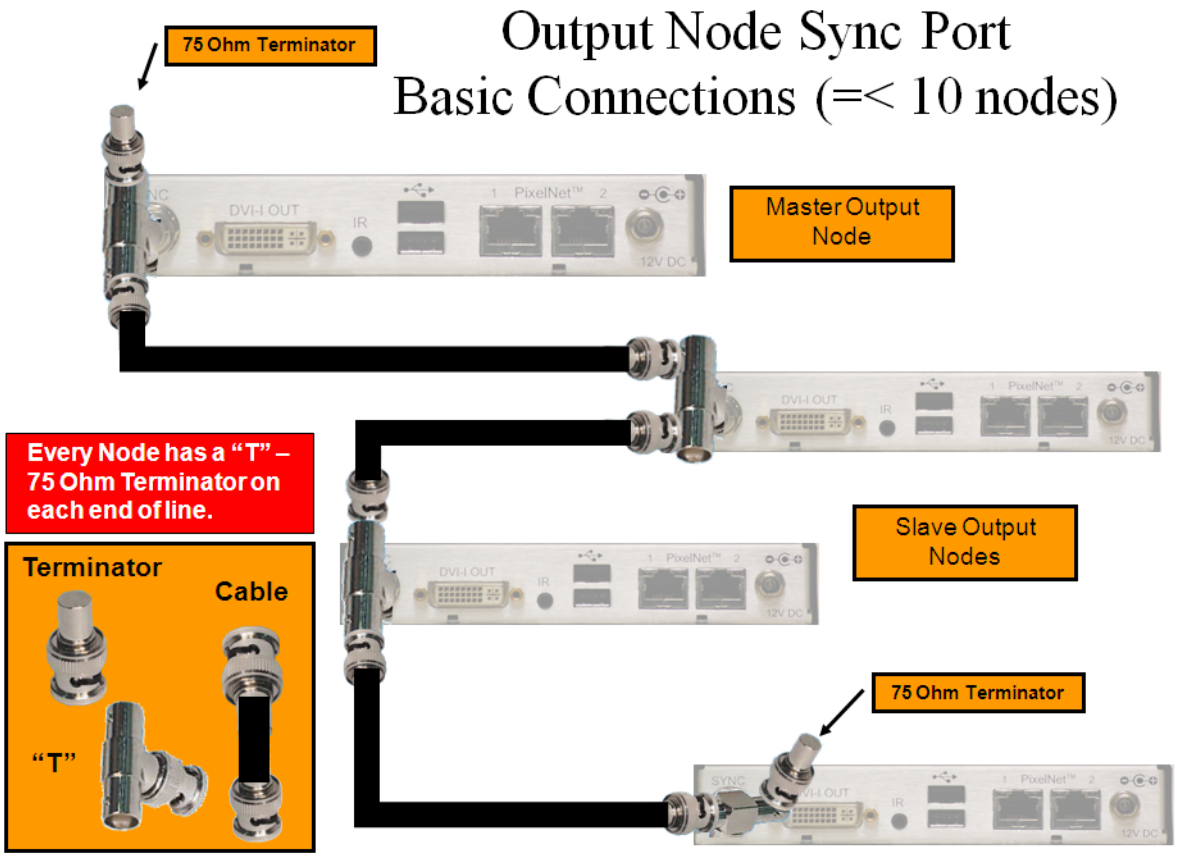


Figure 12 - Output Node Basic Sync Connections

PixelNet Networks with greater than 10 output nodes, require the use of High-bandwidth Video Distribution Amplifiers.

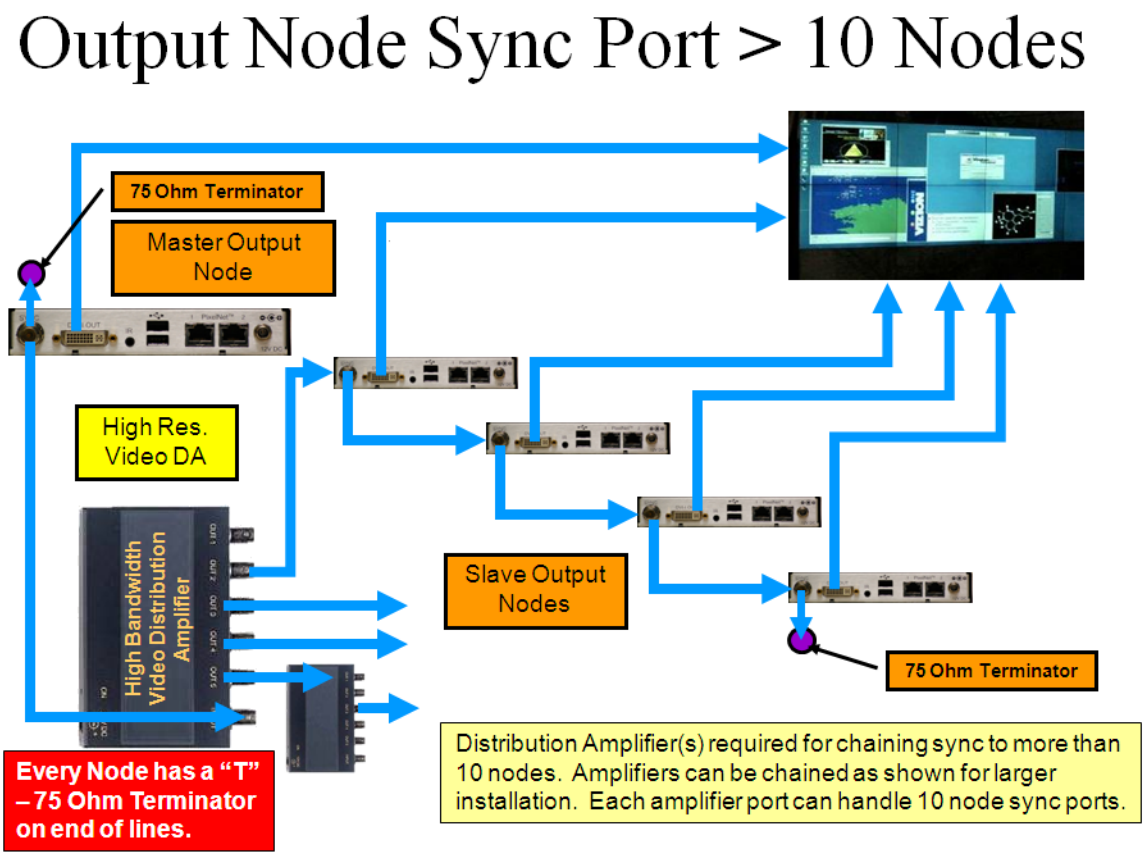

Output Node Sync Port > 10 Nodes
75 Ohm Terminator
Master Output Node
High Res. Video DA
High Bandwidth Video Distribution Amplifier
Slave Output Nodes
75 Ohm Terminator
Every Node has a "T" – 75 Ohm Terminator on end of lines.
Distribution Amplifier(s) required for chaining sync to more than 10 nodes. Amplifiers can be chained as shown for larger installation. Each amplifier port can handle 10 node sync ports.

Figure 13 - Output Node Sync Connections for > 10 Nodes

2.7 Audio Output Node

- Supports both analog and digital signals
- Optical port (S/PDIF), BNC connector (S/PDIF or AES 3id), and two analog TRS ¼" jacks
- Frequency Response: 4Hz - 22 KHz (48 KHz sampling), 4 HZ - 44 KHz (96 KHz sampling)
- Signal-to-Noise Ratio:-100dB
- Dynamic Range: 110dB
- Total Harmonic Distortion: 0.003%

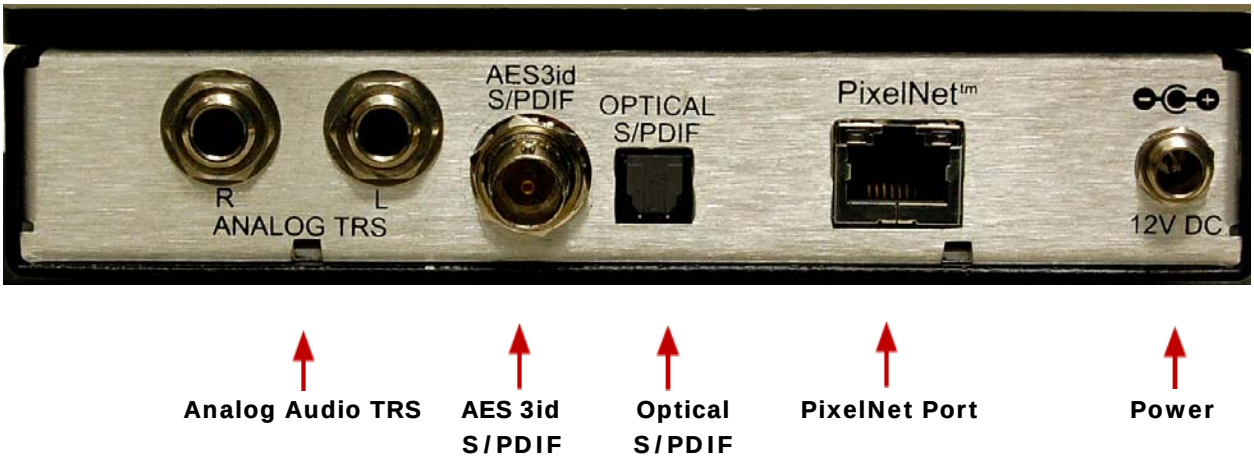


Figure 14 - Audio Output Node

For more information, refer to **"Audio Output Nodes" on page 59**.

2.8 PixelNet Switch

PixelNet utilizes gigabit Ethernet technology. The switches have been customized by Jupiter Systems for maximum PixelNet performance and are not compatible with typical LAN operations.

PixelNet technology requires reliable connections in your cabling. For instance, Cat 6 cables must be used. Cabling connections must be reliable and solid for proper operation.

Note A PixelNet Switch must only be connected to PixelNet nodes. Use Cat 6 Ethernet cables to connect the RJ-45 ports on the nodes to the RJ-45 ports on the switch.

Based on a proprietary switched network, the PixelNet consists of input nodes and output nodes that connect via standard Ethernet network cabling. The following are the different switches used in the three different PixelNet Configuration scenarios:

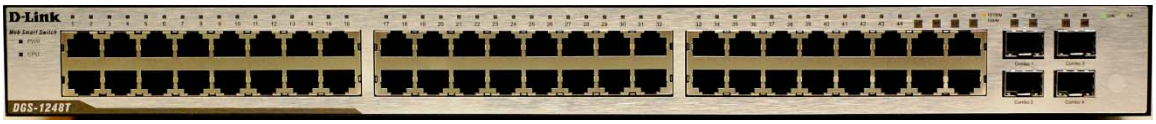


Figure 15 - 48-port Switch

The SPF connectors on the right side of the 48-port switch are not used by PixelNet.

Figure 16 - 12-port Backbone Switch

Figure 17 - 10G 20-port Backbone Switch

Caution Unlike the 12-port backbone switch (which has a left-to-right port arrangement), the 10G 20-port switch follows a top-to-bottom port arrangement. As a result, the ports must follow a top-to-bottom arrangement.

2.9 PixelNet Cable

The PixelNet Network uses Cat 6 cables in its configurations.

2.9.1 Cat 6

Figure 18 - Cat 6 Cable

Chapter 3—PixelNet Network

3. PixelNet Network

3.1 Network Overview

This chapter describes how to configure a PixelNet Network. PixelNet offers the flexibility that allows you to scale the system depending on the number of input and output nodes required by your installation. PixelNet provides for higher frame rates with very low latency. All the nodes will be recognized (plug-n-play) upon connection. The PixelNet configuration scenarios are as follows:

- Single Switch Configuration
- Dual Switch Configuration
- Multiple Switch Configuration

3.2 Single Switch Configuration

The Single Switch Configuration uses a 48-port switch. A PixelNet Domain Controller (PDC) is connected to the switch and is used to manage input and output nodes. **“Figure 19” on page 22** provides an overview of a Single Switch Configuration.

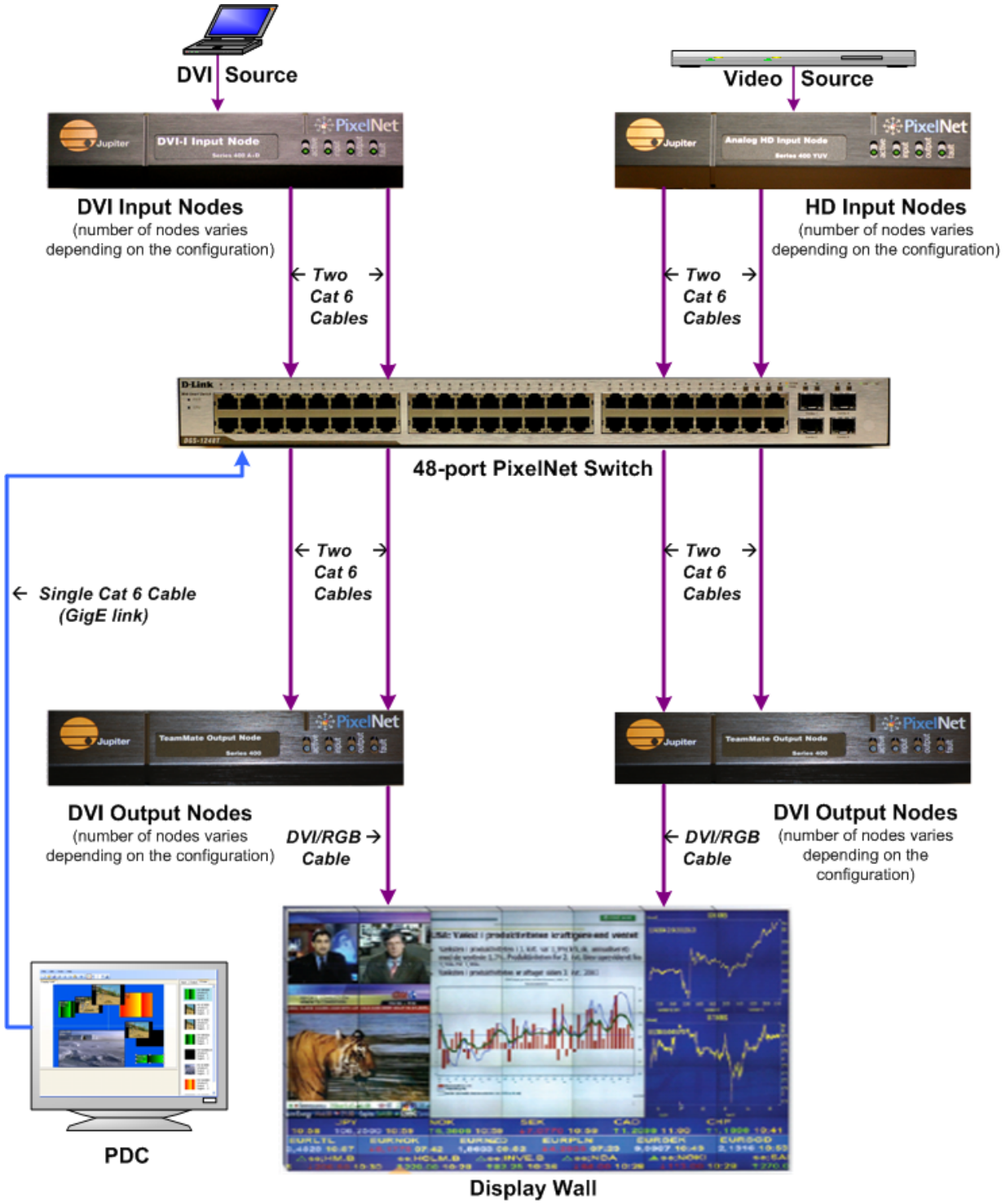

DVI Source
Video Source
DVI Input Nodes
(number of nodes varies depending on the configuration)
HD Input Nodes
(number of nodes varies depending on the configuration)
← Two Cat 6 Cables →
← Two Cat 6 Cables →
48-port PixelNet Switch
← Two Cat 6 Cables →
← Two Cat 6 Cables →
← Single Cat 6 Cable (GigE link)
DVI Output Nodes
(number of nodes varies depending on the configuration)
DVI/RGB Cable →
← DVI/RGB Cable
DVI Output Nodes
(number of nodes varies depending on the configuration)
PDC
Display Wall

Figure 19 - Single Switch Configuration

3.3 Dual Switch Configuration

The Dual Switch Configuration uses two 1 Gbps 48-port switches stacked together. A PDC, connected to a switch, is used to manage input and output nodes. The nodes connect to the switches through two Cat 6 cables. The two switches connect together with two 10 Gbps CX4 cables. **"Figure 20" on page 23** provides an overview of a Dual Switch Configuration.

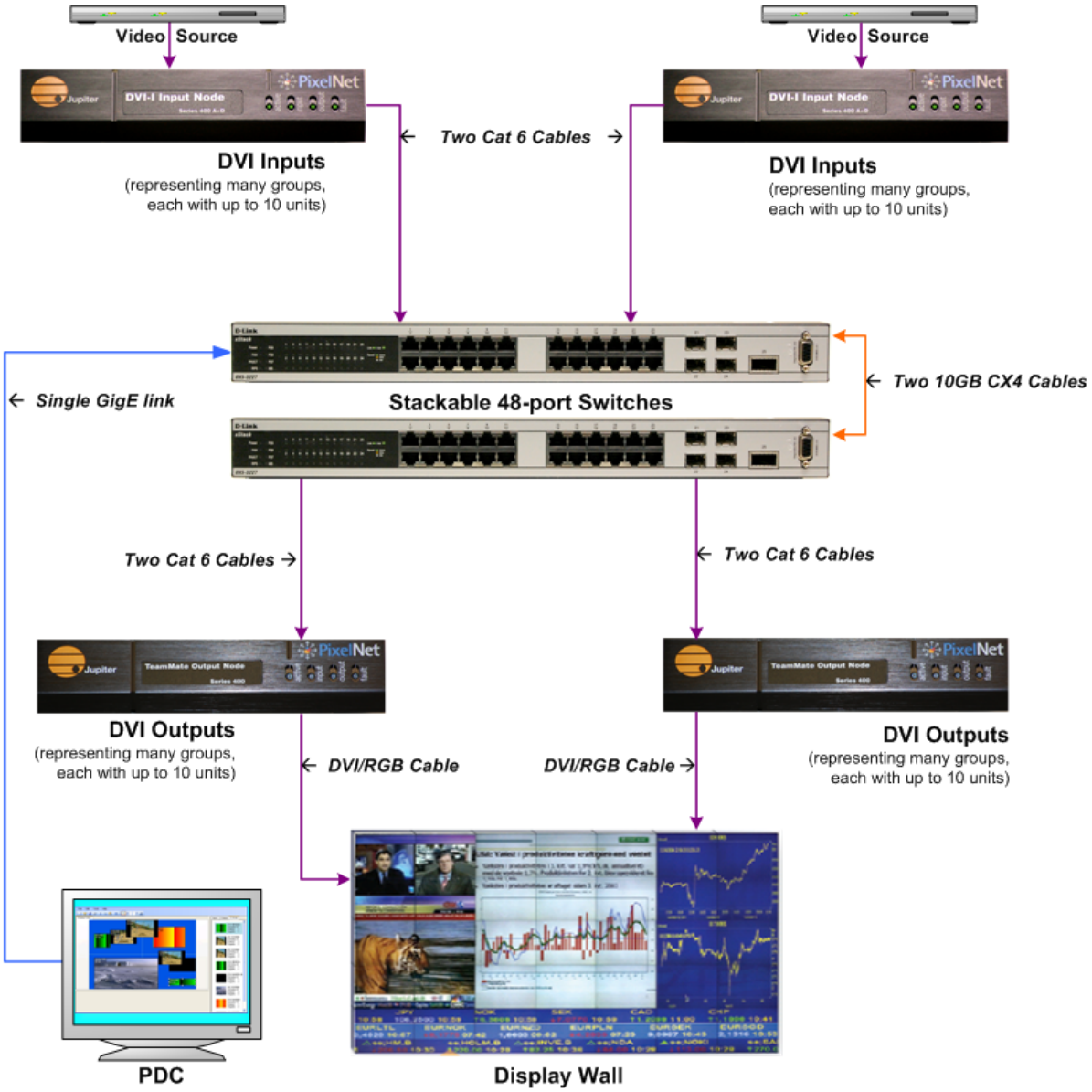


Figure 20 - Dual Switch Configuration

3.3.1 Building a Dual Switch Network

Connect the input and output nodes through two 48-port PixelNet switches as shown in **Figure 21**. All connections between nodes and switches use Cat 6 cables up to 100 meters in length.

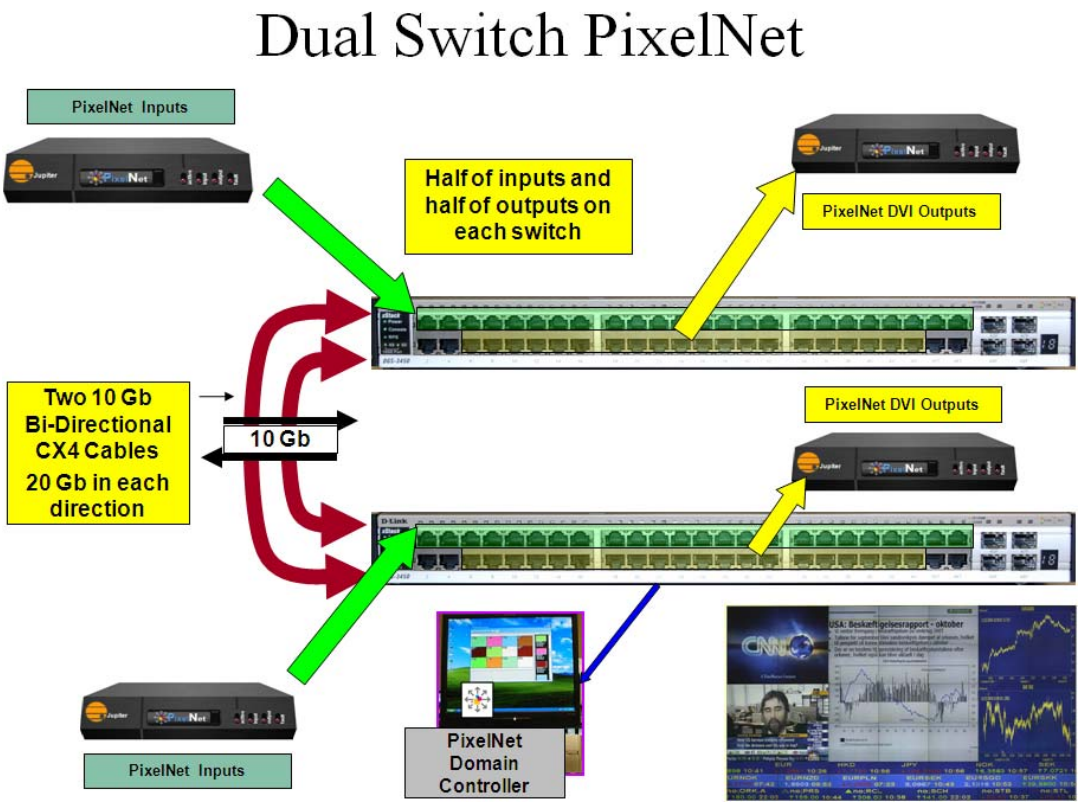


Figure 21 - Building a Dual Switch Configuration

Each switch has two 10 Gbs uplink ports (labeled—ports 49 and 50) use these ports to interconnect the switches. Connect the switches to the nodes by dividing the ports evenly between input and output nodes (as shown in **"Figure 22" on page 25**) so that the data load is balanced.

During operation, each of the connected 1G ports will blink with PixelNet activity. Also, ports 49 and 50 will show activity.

Dual Switch Configuration

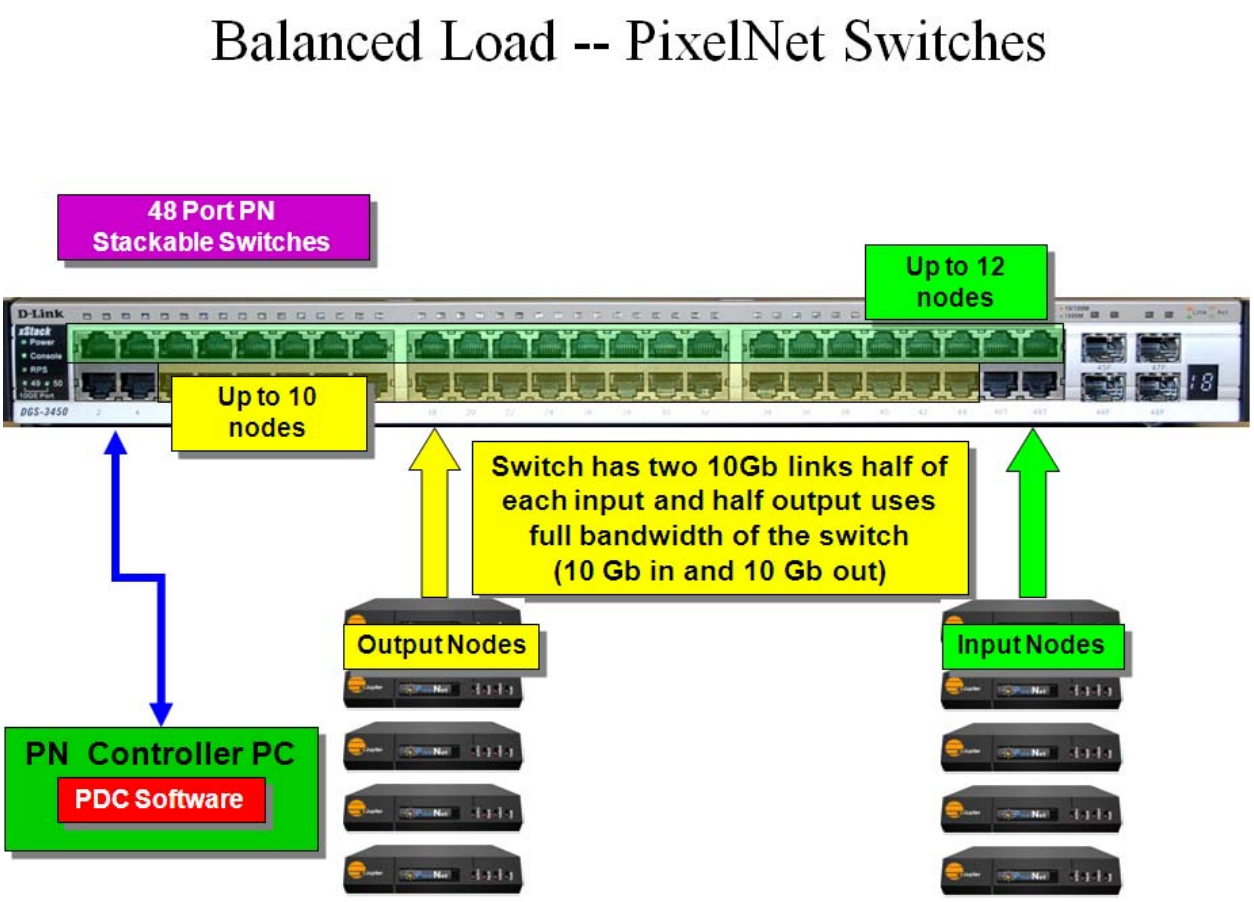


Figure 22 - Balanced load—PixelNet Switch Configuration

A PixelNet Dual Switch Network can manage a total of 24 input and 20 output nodes and one dedicated PDC computer, which requires one switch port.

Note	Put half of input nodes and half of output nodes on each switch to balance data load.

3.4 Multiple Switch Configuration

A Multiple Switch Configuration uses more than two 48-port stackable switches supported by a single 10 Gbps backbone switch. A PDC, connected to a switch, is used to manage input and output nodes. The nodes connect to the switches through two Cat 6 cables. The stackable switches connect to the single 10 Gbps backbone switch with two 10 Gbps CX4 cables.

The 10 GB backbone switch allows PixelNet to expand up to 239 nodes. At present, a maximum sized PixelNet network can have 239 nodes. **“Figure 23” on page 27** provides an overview of a Multiple Switch Configuration.

Multiple Switch Configuration

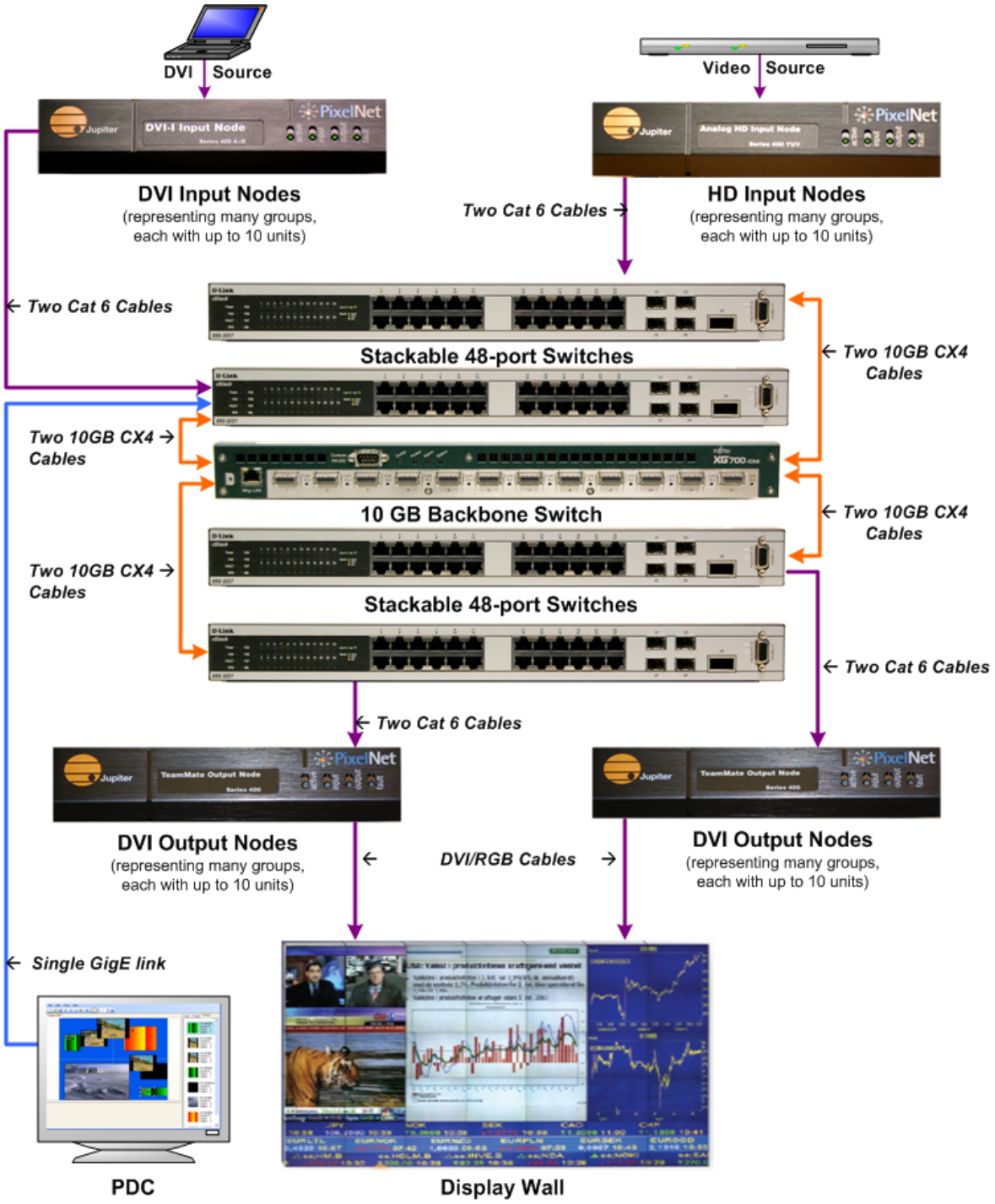

DVI Source
Video Source
DVI Input Nodes
(representing many groups, each with up to 10 units)
Two Cat 6 Cables
HD Input Nodes
(representing many groups, each with up to 10 units)
Two Cat 6 Cables
Stackable 48-port Switches
Two 10GB CX4 Cables
Two 10GB CX4 Cables
10 GB Backbone Switch
Two 10GB CX4 Cables
Two 10GB CX4 Cables
Stackable 48-port Switches
Two Cat 6 Cables
Two Cat 6 Cables
DVI Output Nodes
(representing many groups, each with up to 10 units)
DVI/RGB Cables
DVI Output Nodes
(representing many groups, each with up to 10 units)
Single GigE link
PDC
Display Wall

Figure 23 - Multiple Switch Configuration

3.5 Replace Input Nodes

The windows for each input on a display wall are associated with the name given to the input.

Note You must save the layouts and the configurations before attempting to replace a node.

Note If you do not have a replacement input node, please contact **Jupiter Technical Support** to order one. Ensure that the correct node has been ordered from the four different input nodes that Jupiter offers—DVI, HD, 3G, or Quad SD.

1. Close any windows associated with the failed input node.
2. Write down the name of the failed input node or check your records for input names written down during the installation phase.
3. Disconnect the failed input node from the PixelNet Domain.
4. Connect the new node directly to the ports on the switch (connected to the PixelNet Domain) where the failed node was connected.
5. Choose **Edit** from the **Configuration** menu (PDC--> Configuration-->Edit). The **PixelNet Domain Configuration** dialog opens.
6. Click the **Source Configuration** tab. Ignore the message prompt about dragging and dropping, if any.
7. Right-click on the faulty node channel in the **Input Channels** list and click **Properties**. The **Channel Combinations** dialog appears.
8. In the **Name** field of the **Input Channel Properties Dialog—Source Tab**, give the replacement node the same name as the faulty node.
9. Click **Apply**, then **OK** on the **Input Channel Properties** dialog.
10. Click **Save**, then **Done** on the **PixelNet Domain Configuration** dialog to save the configuration.
11. **Load** the working configuration (PDC-->Configuration-->Load).

    The last saved layout will be reloaded on all the display walls.

3.6 Replace Output Nodes

Perform the following to replace an output node:

1. Close all the windows that have any portion on the display corresponding to the failed output node.
2. Write down the name of the failed output node or check your records for output node names written down during the installation phase.
3. Find the failed node by its name in the Outputs tab section (PDC-->Outputs tab) and write down the corresponding node display number.
4. Disconnect the failed output node from the PDC Domain.

Note If you do not have a replacement output node, please contact **Jupiter Technical Support** to order one.

5. Connect the replacement node exactly in the way the failed node was connected in the PixelNet Domain.
6. Choose **Edit** from the **Configuration** menu (PDC--> Configuration-->Edit). The **PixelNet Domain Configuration** dialog opens.
7. Click the **Display Wall Configuration** tab.
8. Right-click on the replacement node from the **Videos** list (PixelNet Domain Configuration dialog-->Display Wall Configuration tab-->Videos tab) and click **Properties**. The **Output Properties Dialog** appears.
9. In the **Name** field of the **Output Properties** dialog**—Node** tab, give the replacement node the same name as the faulty node.
10. Click **Apply**, then **OK** on the **Output Properties** dialog. The icon of the replacement node will appear with its new name and MAC address on the **Video** tab node list. However, the icon bears the term, “unassigned” and has the picture of a black monitor preceding the name to show its unassigned status.
11. Locate the replaced node on the assigned wall displays based on the display number from step **3.**

Note	The faulty node, while physically removed from the domain, is still remembered by its node assignment and MAC address in the current configuration. Although the replacement node now carries the same name as the faulty node, *the MAC address is different*. In order for the configuration to completely substitute the faulty node with the replacement node, the replacement node must be given the same display assignment as the faulty node.

12. Drag the replacement node thumbnail from the **Videos** list and drop it over the blue rectangle carrying the display number and MAC address of the faulty node.

    The display will replace the MAC address of the faulty node with that of the replacement node. Also, the replacement node thumbnail icon changes from a black monitor to white, showing its assigned status. The *Unassigned* classification also disappears from the thumbnail.

13. Click **Save**, then **Done** on the **PixelNet Domain Configuration** dialog to save the configuration.

14. **Load** the working configuration (PDC-->Configuration-->Load). The last saved layout will be reloaded on all the display walls.

Chapter 4—PixelNet Installation

4. PixelNet Installation

4.1 Installation Overview

The following are guidelines for installing PixelNet:

- Unpack and inspect all equipment
- Attach input device cables to PixelNet input nodes
- Attach output device cables to PixelNet output nodes
- Connect PixelNet input node ports to the odd ports (top row) of the PixelNet Switch
- Connect PixelNet output node ports to the even ports (bottom row) of the PixelNet Switch
- The system running the PixelNet Domain Control (PDC) software must be plugged into the PixelNet Switch. The PDC requires a single port on the switch
- Turn on power in this sequence—displays, input sources, nodes, PixelNet switch, and PDC Server

4.2 Pre-installation Requirement

Before you install the PDC software and related applications, you must disable items within the properties of the PixelNet network connection.

Caution	The PixelNet Network Connection ***must*** support Jumbo Packets.

4.2.1 Disabling the Network Connection in Windows XP

To disable the connection properties list on the PixelNet Domain Server:

1. Access the **Network Connections** section in the Server. (Network Connection—>LAN or High-Speed Internet).
2. Select the network connection to be used for PixelNet.
3. Right-click and choose **Properties** from the menu.

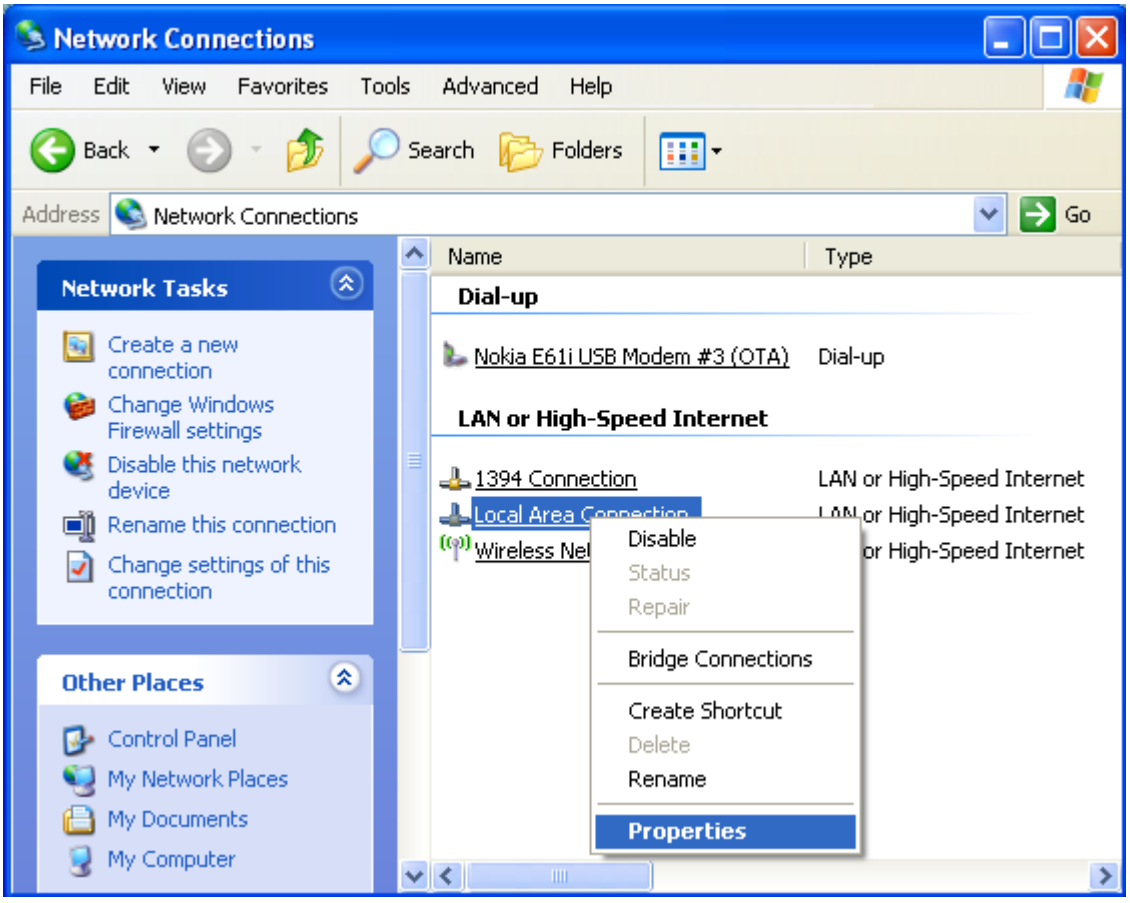


Figure 24 - Network Connections in XP

Note As an option, rename this **Local Area Connection** as **PixelNet Interface** to simplify later domain configuration.

4. The following connection dialog appears:

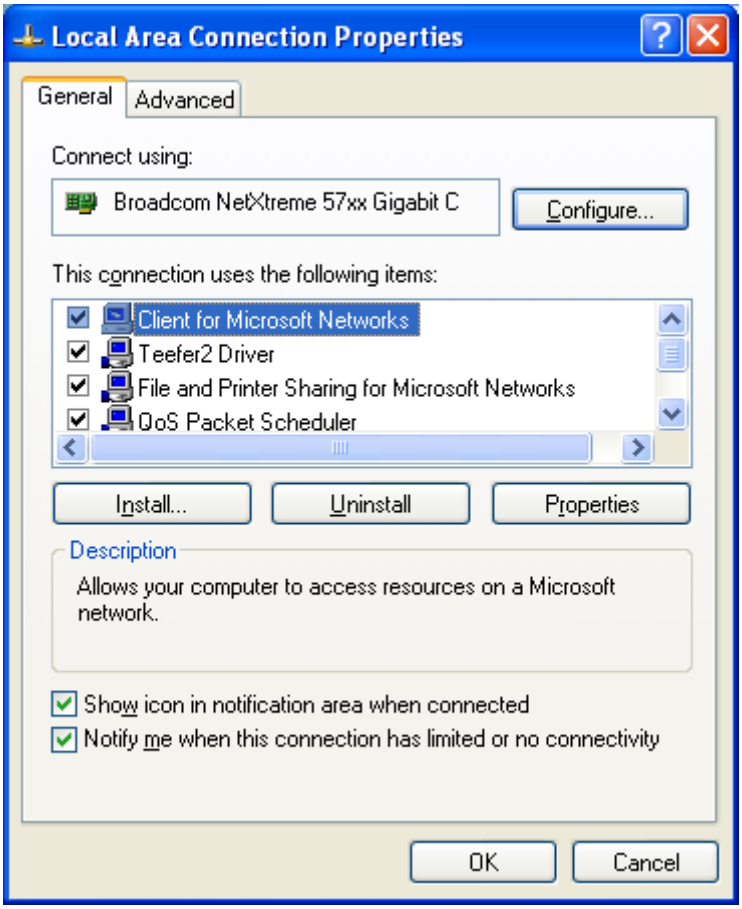


Figure 25 - Connection Properties in XP

5. Disable by unchecking the checkbox next to all the items listed under, ***This connection uses the following items:***.
6. Click **Configure**.
7. In the dialog that opens, turn off all power saving options and all Wake On LAN options.

Caution Turn off all the power saving and Wake On LAN options to ensure a reliable PixelNet network.

8. Click **OK**.
9. Close the **Network Connections** dialog.

4.2.2 Disabling the Network Connection in Windows Vista

To disable the connection properties list on the PixelNet Domain Server:

1. Access the **Network Connections** section in the Server. (Control Panel—>Network and Sharing Center—>Manage Network Connections—>Network Connections—>LAN or High-Speed Internet).
2. Select the network connection to be used for PixelNet.
3. Right-click and choose **Properties** from the menu.

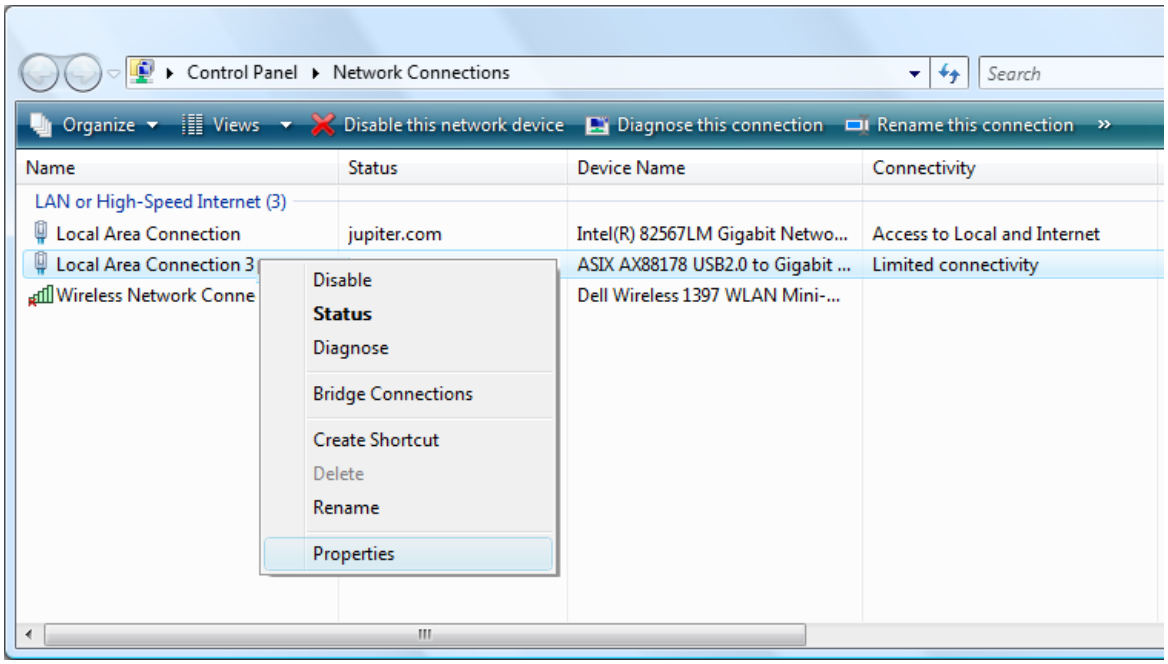


Figure 26 - Network Connections in Vista

4. The following connection dialog appears:

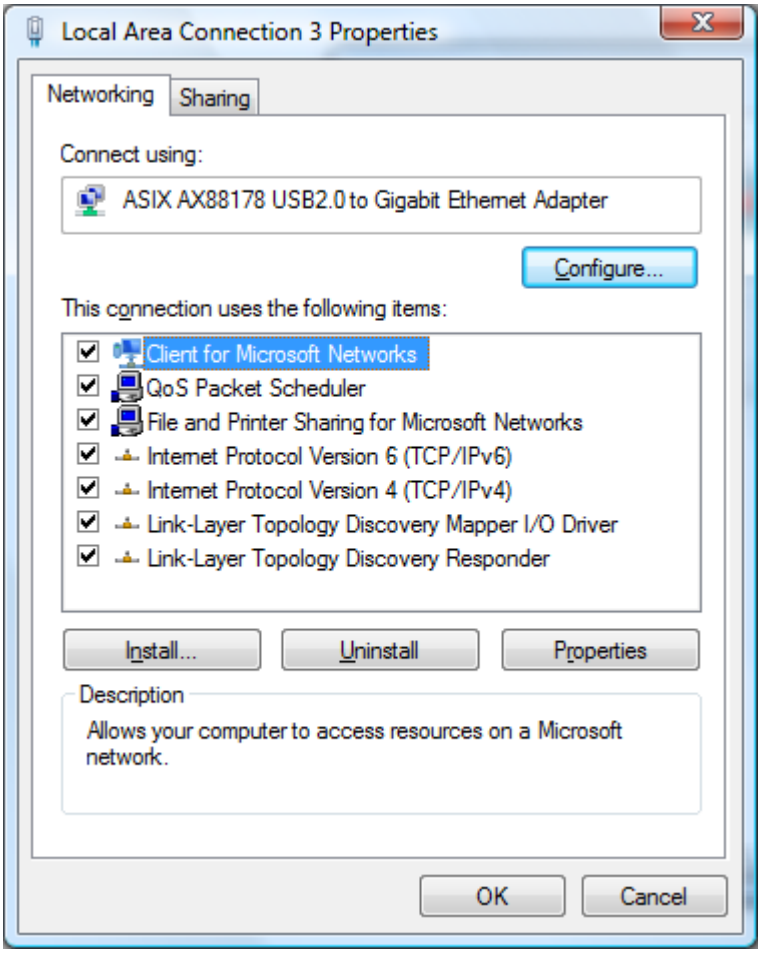


Figure 27 - Connection Properties in Vista

5. Disable by unchecking the checkbox next to all the items listed under, ***This connection uses the following items:***.
6. Click **Configure**.
7. In the dialog that opens, turn off all power saving options and all Wake On LAN options.

Caution	Turn off all the power saving and Wake On LAN options to ensure a reliable PixelNet network.

8. Click **OK**.
9. Close the **Network Connections** dialog.

4.3 Installation Procedure

1. Insert the PDC CD in the Server.
2. Select **Run** from the **Start** menu.
3. Click **Browse** and start the Setup.exe file in the CD directory. The installation program will install PDC in the following path in your computer—C:\Program Files\Jupiter\PDC
4. Click **Run** on the Security Warning dialog.

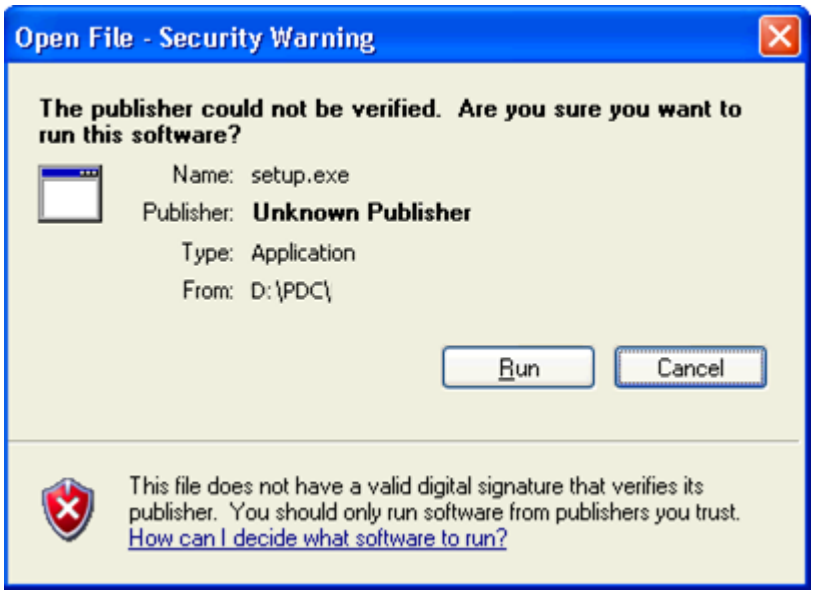

Open File - Security Warning
The publisher could not be verified. Are you sure you want to run this software?
Name: setup.exe
Publisher: Unknown Publisher
Type: Application
From: D:\PDC\
Run
Cancel
This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust.
How can I decide what software to run?

Figure 28 - Security Warning

5. Read the following license agreement carefully and click **I accept the terms in the license agreement** to acknowledge your license agreement.

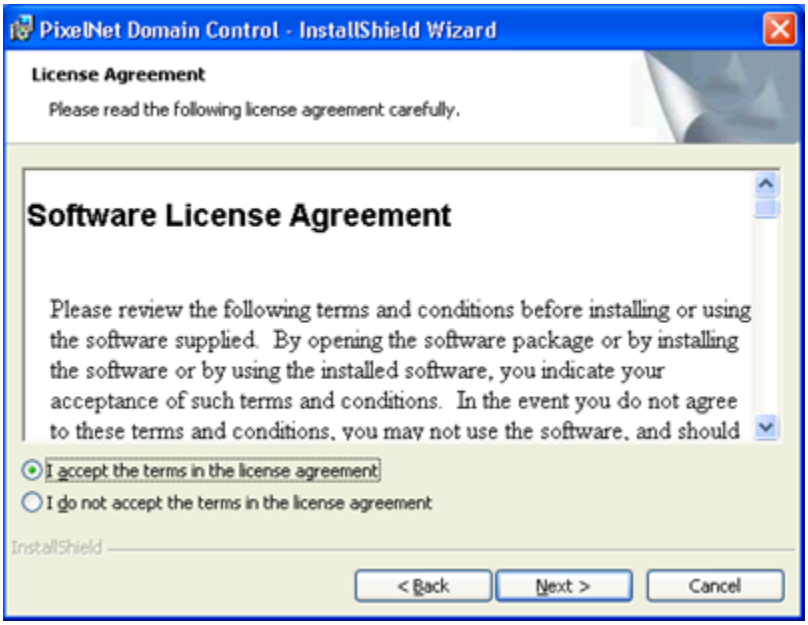

PixelNet Domain Control - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software License Agreement
Please review the following terms and conditions before installing or using the software supplied. By opening the software package or by installing the software or by using the installed software, you indicate your acceptance of such terms and conditions. In the event you do not agree to these terms and conditions, you may not use the software, and should
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

Figure 29 - License Agreement

6. Click **Next**.

7. Click **Next** to continue with the installation.

PixelNet Domain Control - InstallShield Wizard
Welcome to the InstallShield Wizard for PixelNet Domain Control
The InstallShield(R) Wizard will install PixelNet Domain Control on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

Figure 30 - InstallShield Wizard

8. Choose **Typical** as the installation type. Click **Next**.

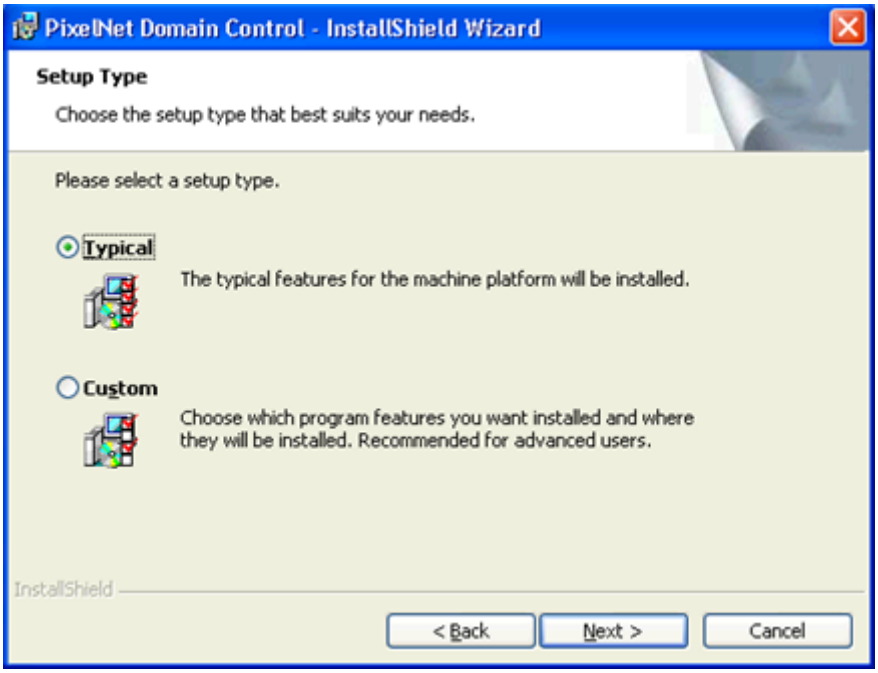

PixelNet Domain Control - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Typical
The typical features for the machine platform will be installed.
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

Figure 31 - Setup Type

9. Click **Install**. You will see progress screens highlighting the installation progress.

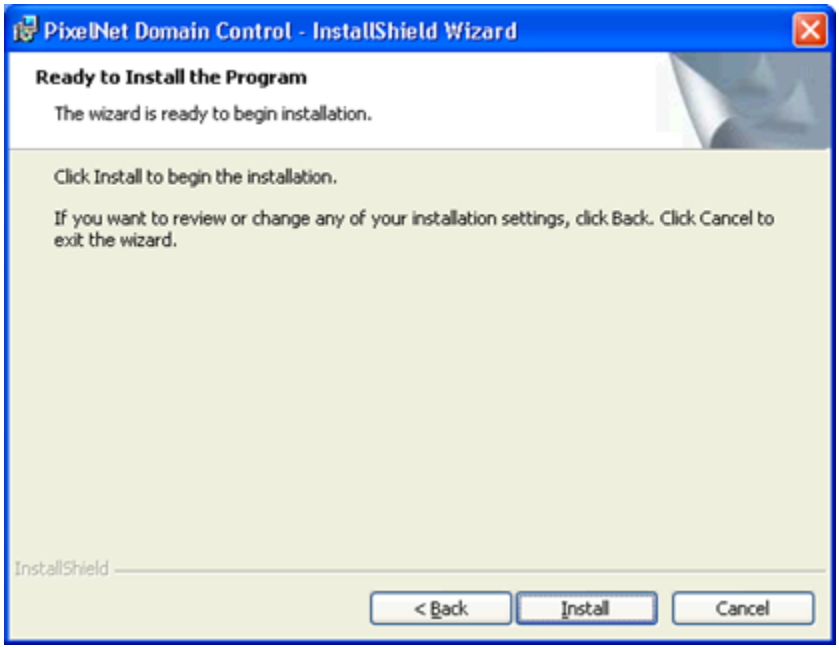

PixelNet Domain Control - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Figure 32 - Ready to Install

10. Click **Finish**.

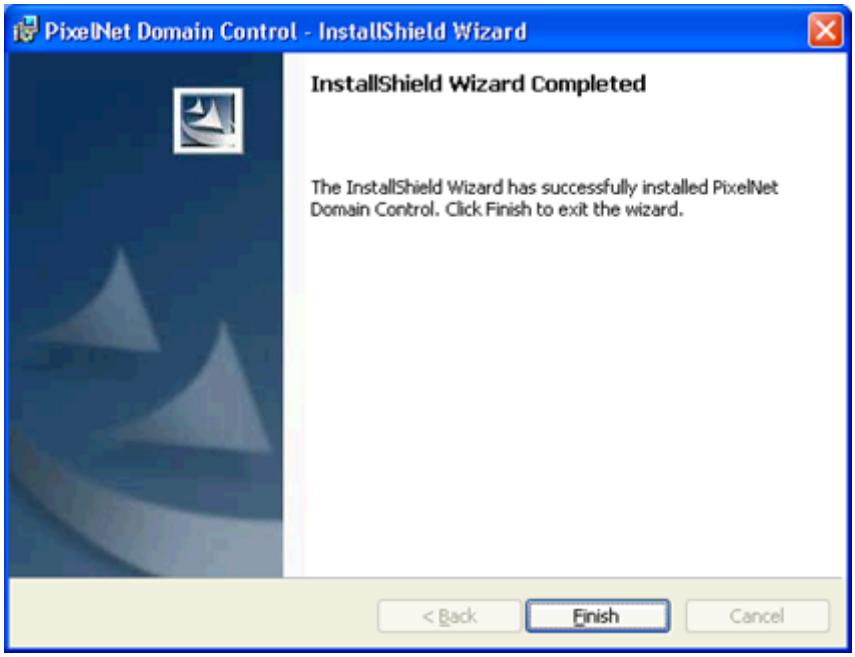

PixelNet Domain Control - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed PixelNet Domain Control. Click Finish to exit the wizard.
< Back
Finish
Cancel

Figure 33 - Finish Install

4.4 Installing PDC Applications

Before you can startup your PDC software, you need to install two additional applications from the PDC software folder:

- dotnetfx (Vista users do not need to install)
- WinPCap

4.4.1 Installing dotnetfx

1. In **My Computer** open the PDC CD and locate the dotnetfx icon as shown below.

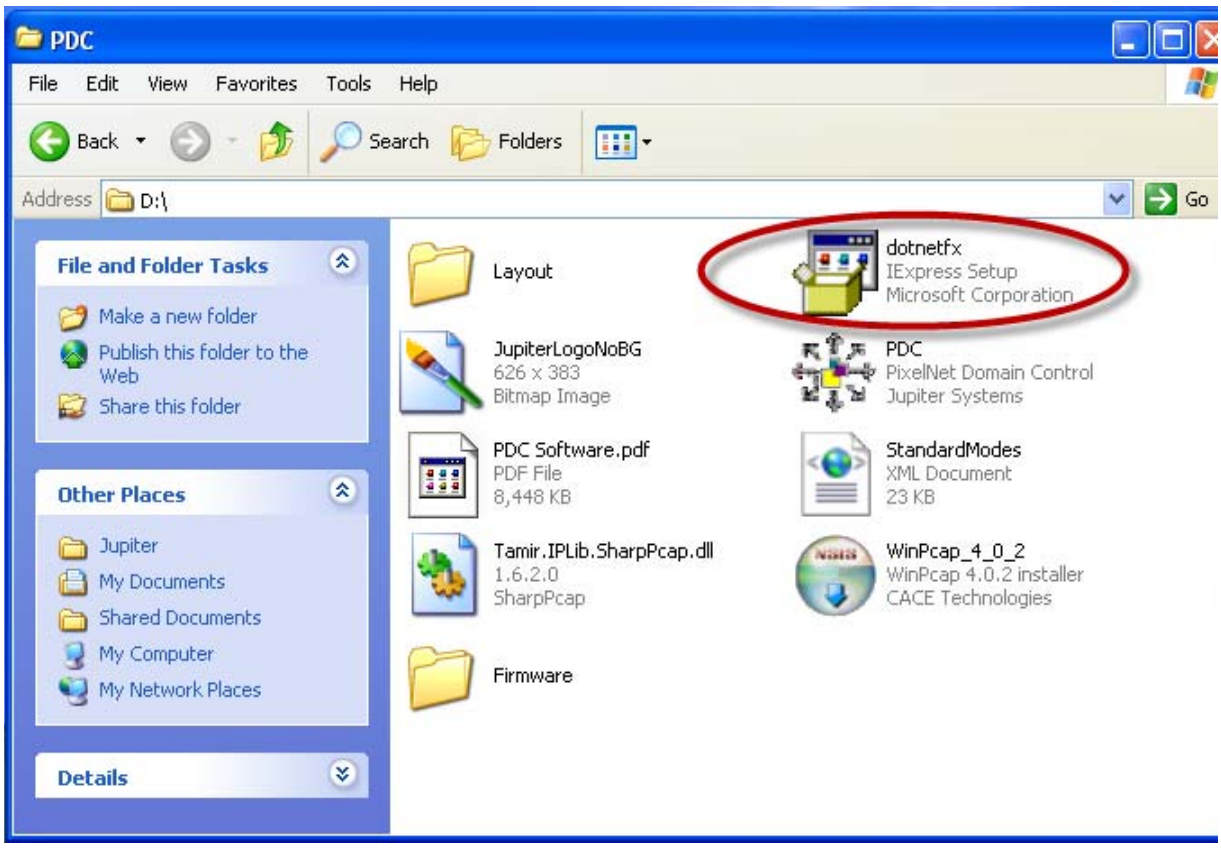


Figure 34 - dotnetfx Application

2. Double-click to start the dotnetfx Install Wizard.

3. Read, understand, and agree to the terms of the End-User License Agreement before clicking **I have read and accept the terms of the License Agreement**.

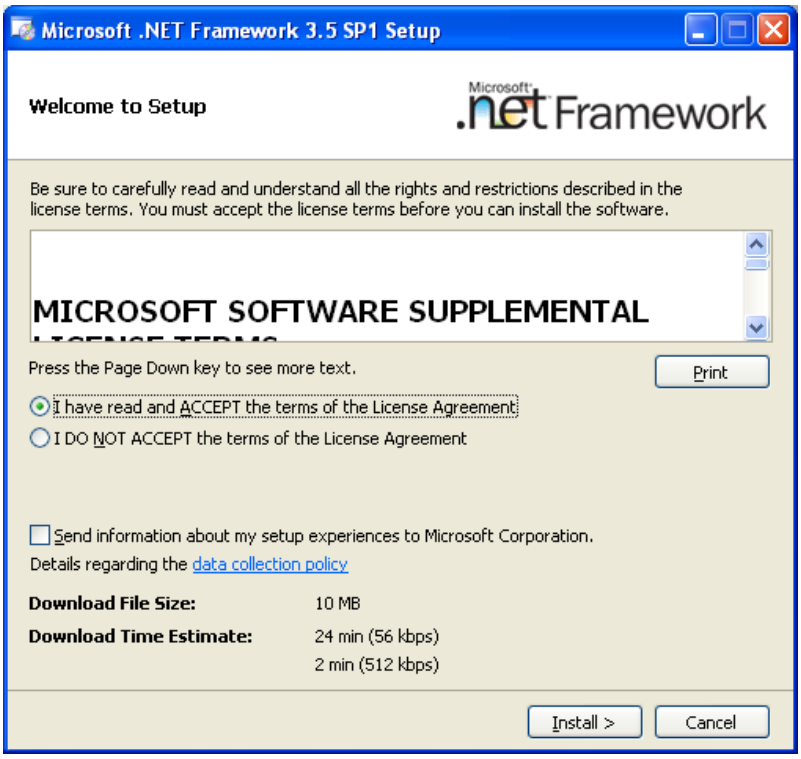

Microsoft .NET Framework 3.5 SP1 Setup
Welcome to Setup
Microsoft .net Framework
Be sure to carefully read and understand all the rights and restrictions described in the license terms. You must accept the license terms before you can install the software.
MICROSOFT SOFTWARE SUPPLEMENTAL
Press the Page Down key to see more text.
Print
I have read and ACCEPT the terms of the License Agreement
I DO NOT ACCEPT the terms of the License Agreement
Send information about my setup experiences to Microsoft Corporation.
Details regarding the data collection policy
Download File Size: 10 MB
Download Time Estimate: 24 min (56 kbps)
2 min (512 kbps)
Install >
Cancel

Figure 35 - .NET 3.5 Setup

4. Click **Install**. The installation progress screen displays.

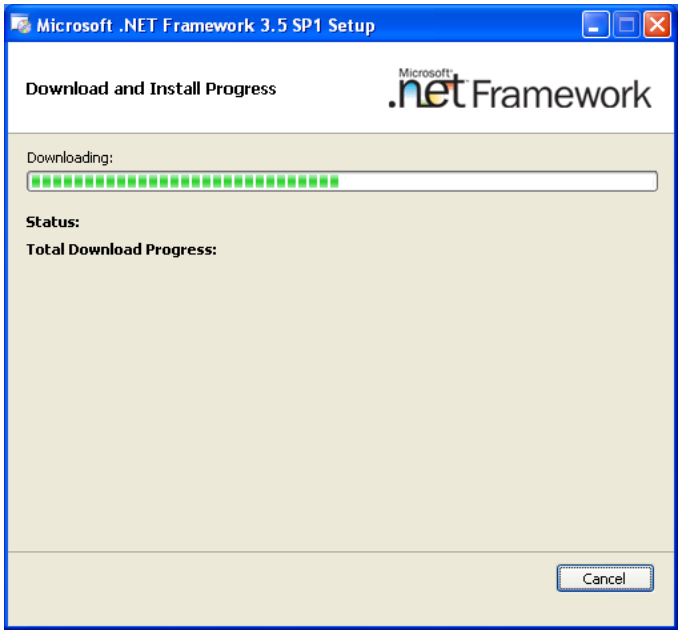


Figure 36 - .NET 3.5 Installation Progress

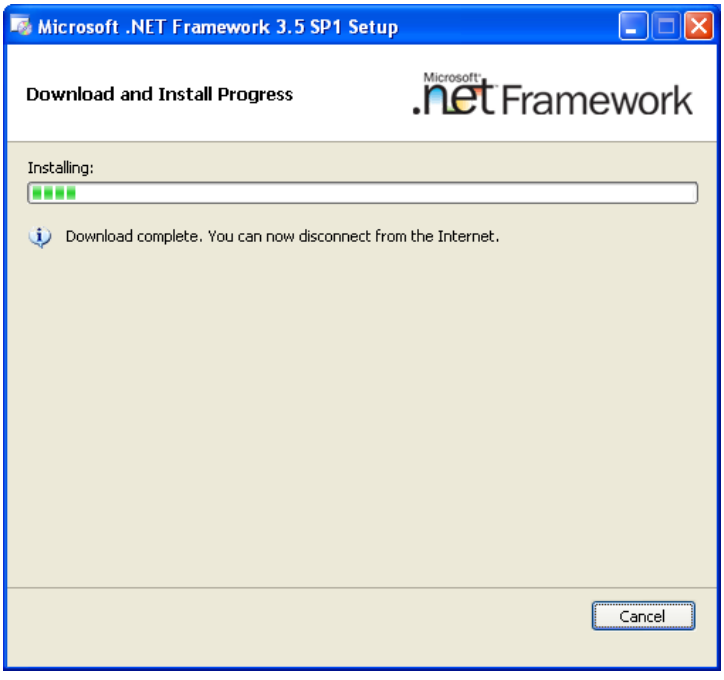

Microsoft .NET Framework 3.5 SP1 Setup
Download and Install Progress
Microsoft .net Framework
Installing:
Download complete. You can now disconnect from the Internet.
Cancel

Figure 37 - .NET 3.5 Installing Components

5. Click **Finish** when Setup is complete.

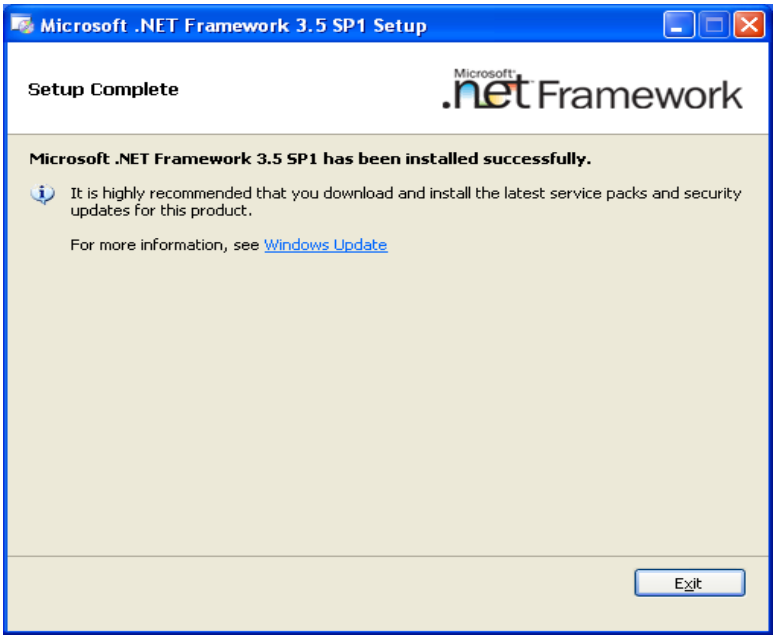

Microsoft .NET Framework 3.5 SP1 Setup
Setup Complete
Microsoft .NET Framework
Microsoft .NET Framework 3.5 SP1 has been installed successfully.
It is highly recommended that you download and install the latest service packs and security updates for this product.
For more information, see Windows Update
Exit

Figure 38 - .NET 3.5 Setup Complete

4.4.2 Installing WinPcap

1. Locate the **WinPcap** application in the root of the PDC CD.
2. Click and start the WinPcap Install Wizard. Click **Next**.

Figure 39 - WinPcap Installer

3. Click **Next**.

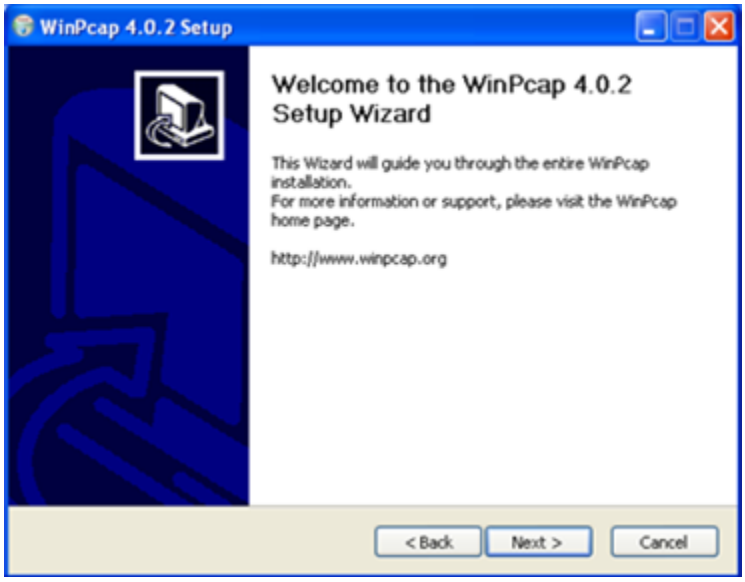

WinPcap 4.0.2 Setup
Welcome to the WinPcap 4.0.2 Setup Wizard
This Wizard will guide you through the entire WinPcap installation.
For more information or support, please visit the WinPcap home page.
http://www.winpcap.org
< Back
Next >
Cancel

Figure 40 - WinPcap Install Setup

4. If you accept the terms of the license agreement, click **I Agree** to continue.

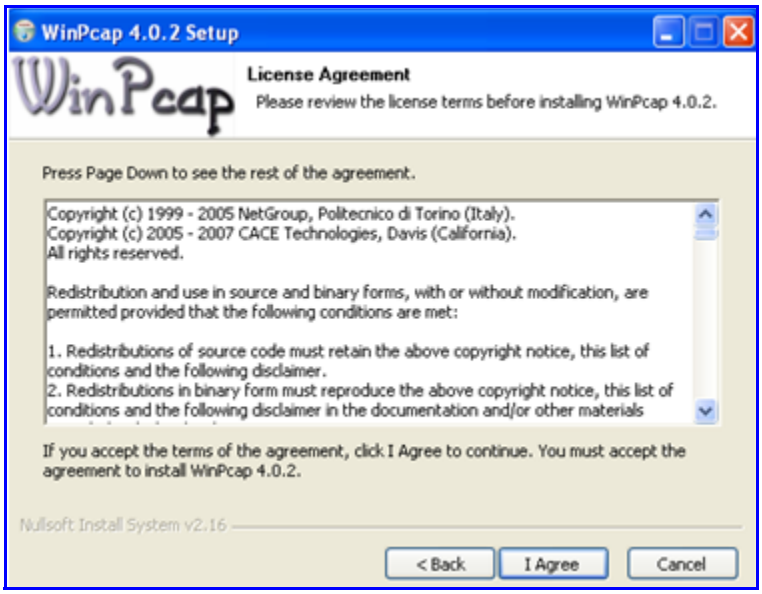

WinPcap 4.0.2 Setup
License Agreement
Please review the license terms before installing WinPcap 4.0.2.
Press Page Down to see the rest of the agreement.
Copyright (c) 1999 - 2005 NetGroup, Politecnico di Torino (Italy).
Copyright (c) 2005 - 2007 CACE Technologies, Davis (California).
All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install WinPcap 4.0.2.
Nullsoft Install System v2.16
< Back
I Agree
Cancel

Figure 41 - WinPcap License Agreement

5. Click **Install**. The installation progress will be highlighted in a screen.

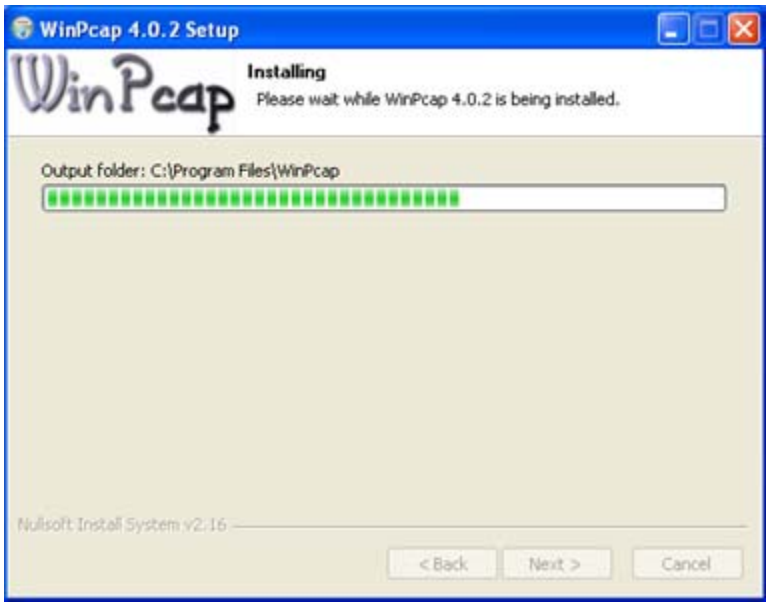


Figure 42 - WinPcap Installing

6. Click **Finish** when Setup is complete.

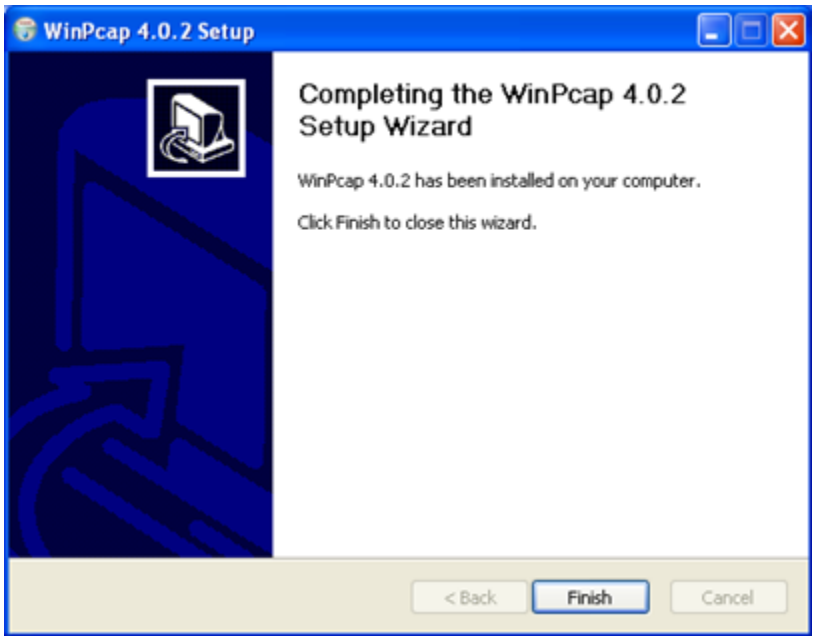


Figure 43 - WinPcap Complete Setup

7. Restart the system after the software is installed.

4.4.3 Power-on Sequence

In order for the PixelNet system to automatically detect the input sources and output displays, the following power-on sequence must be used:

1. Turn on displays
2. Turn on Input Sources
3. Turn on all nodes
4. Turn on PixelNet Switch(s)
5. Turn on PDC Server

4.5 Starting PDC

1. Click on **START**.

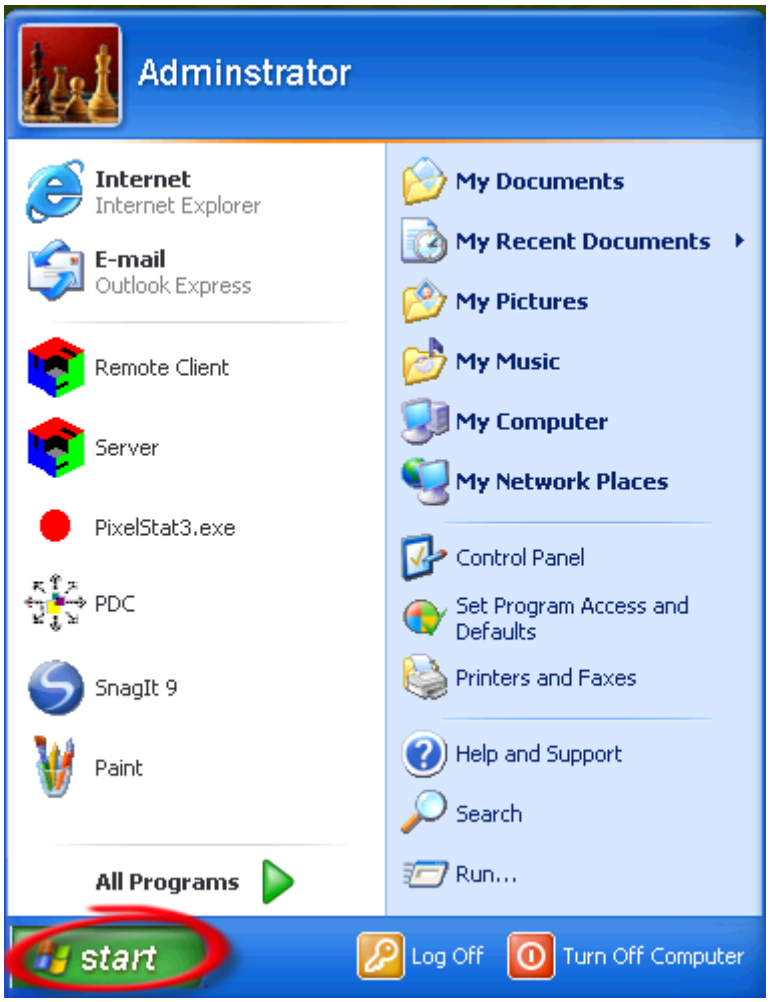


Figure 44 - Start Page

2. Open the **Start** menu to start the PDC software as shown below.
3. Click on **All Programs→Jupiter→PDC→PDC**.

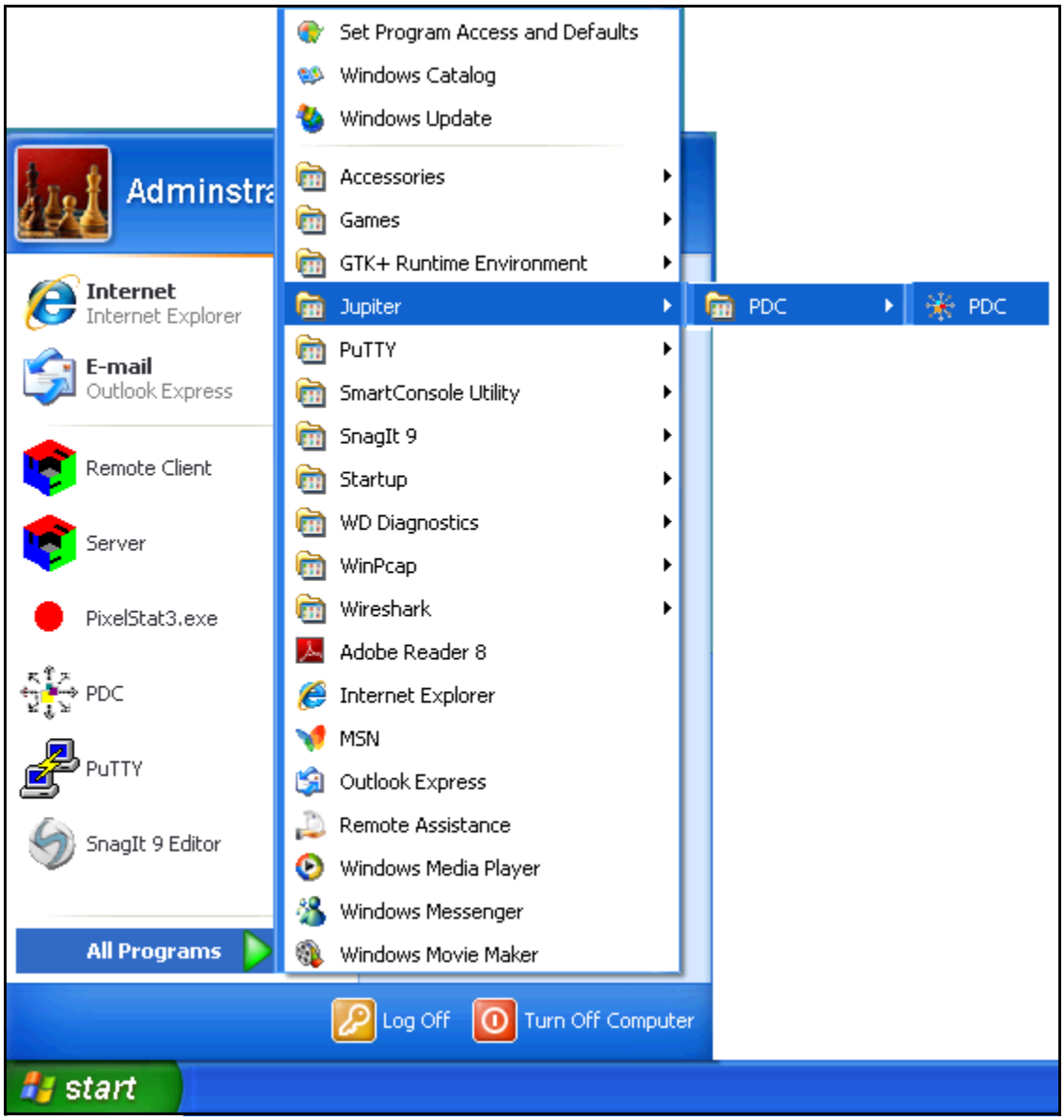


Figure 45 - Start Program

Depending on your firewall settings, the following dialog may be displayed the first time you start PDC.

Windows Security Alert
To help protect your computer, Windows Firewall has blocked some features of this program.
Do you want to keep blocking this program?
Name: PixelNet Domain Controller
Publisher: Jupiter Systems
Keep Blocking
Unblock
Ask Me Later
Windows Firewall has blocked this program from accepting connections from the Internet or a network. If you recognize the program or trust the publisher, you can unblock it. When should I unblock a program?

Figure 46 - Windows Security Alert Screen

4. Click the **Unblock** button.

The PDC software starts up with the following screen:

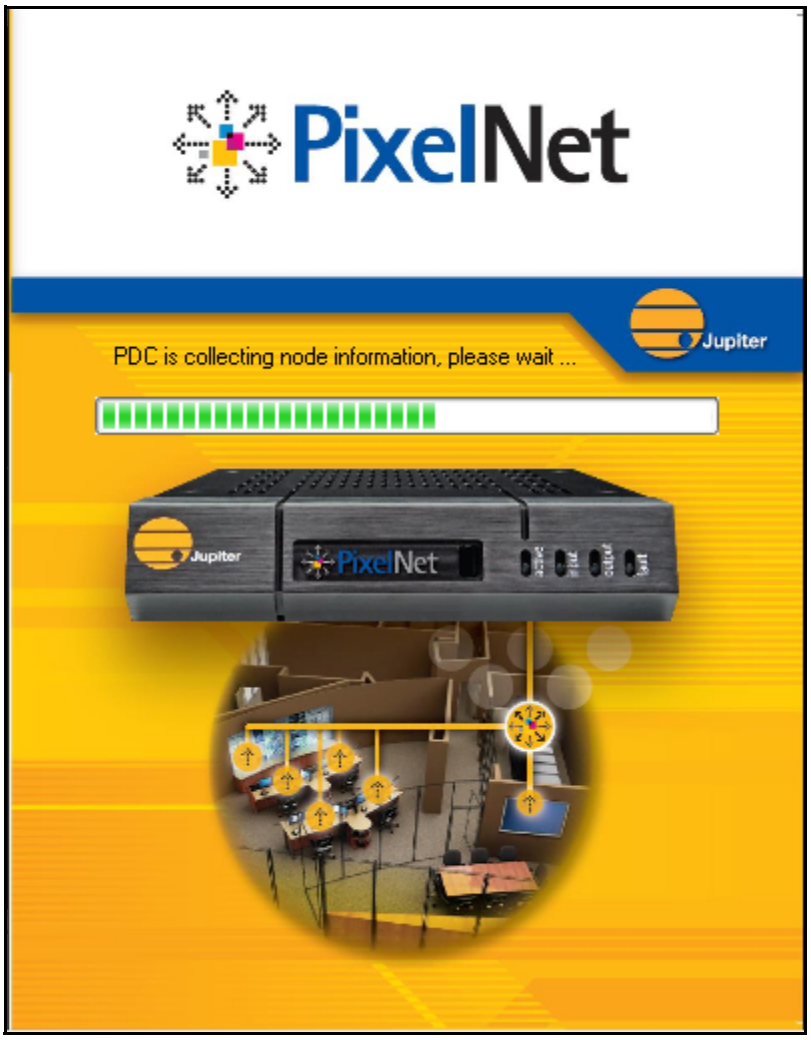


Figure 47 - Start up Screen

Chapter 5—PixelNet Domain Configuration

5. PixelNet Domain Configuration

Once the PDC software discovers the nodes, the **PixelNet Domain Configuration** dialog appears with the following tabs:

- **Domain Connection**
- **Display Wall Configuration**
- **Source Configuration**

Buttons:

- **Back:** Reverts to the previous tab in the dialog.
- **Next:** Proceeds to the next tab in the dialog.
- **Help:** Opens the PDC Help.
- **Save As...:** Saves current configuration under new name.
- **Save**: Saves current configuration.
- **Done**: Prompts to save and/or load.

5.1 Initial Domain Configuration

The initial startup of PDC launches the **PixelNet Domain Configuration** dialog with the **Domain Connection** tab active.

Caution	If this is an upgrade, ensure that you have the latest firmware for the Configuration to work properly. For more information refer to the section, **"Update Firmware" on page 182**.

5.2 The Domain Connection Tab

The **Domain Connection** page of the **Domain Configuration** dialog offers a drop-down list of available Ethernet connections. The initial PDC software launch will open this configuration dialog. Subsequent new configurations can be done by selecting **New** from the **Configuration** menu (**Configuration—>New**).

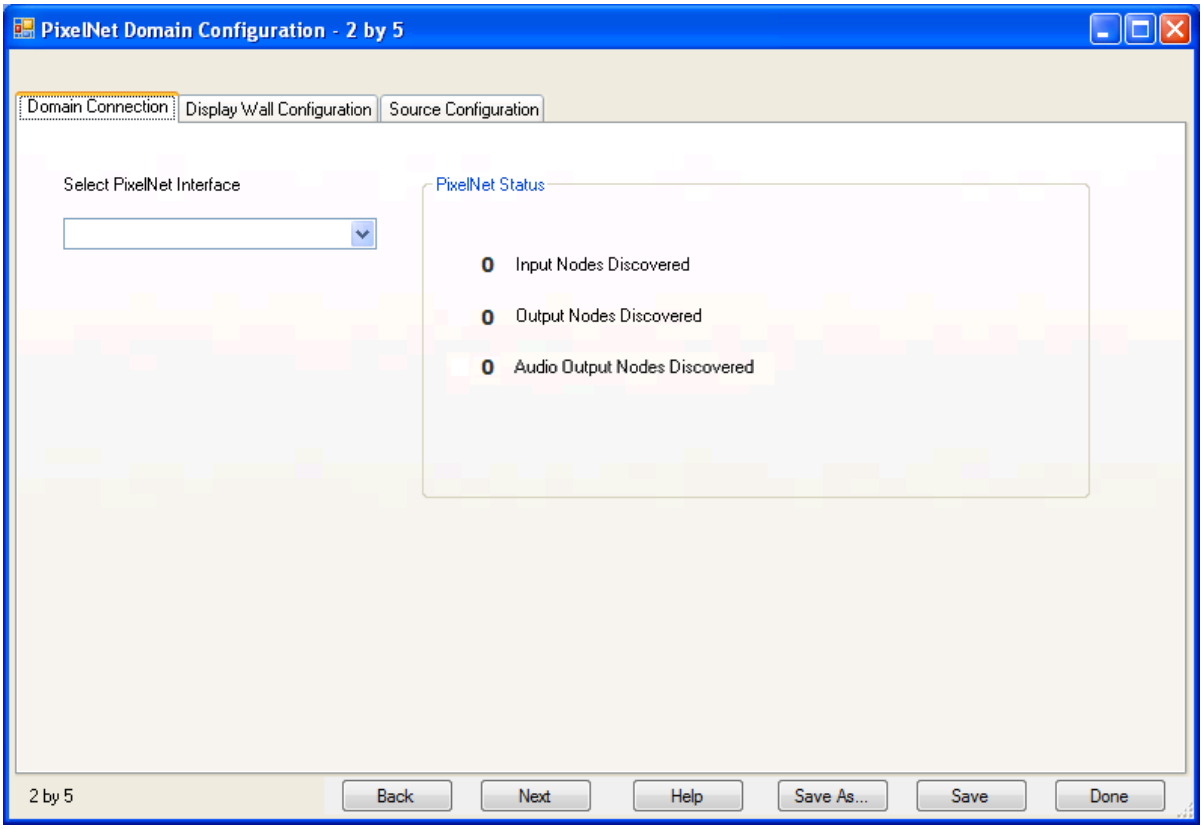


Figure 48 - New Domain Connection

5.2.1 Selecting a PixelNet Interface (Domain Connection)

1. Select the appropriate domain connection from the drop-down list. If you renamed the Network Connection as PixelNet Interface, (as suggested under **"Disabling the Network Connection in Windows XP" on page 32**) select this from the drop-down list. The **PixelNet Status** section displays the nodes discovered by this selection. Failure to select a domain connection will prompt an error message demanding that one be chosen.

   The displayed list of domain connections have PixelNet nodes attached to them and are collectively considered a **PixelNet Domain**.

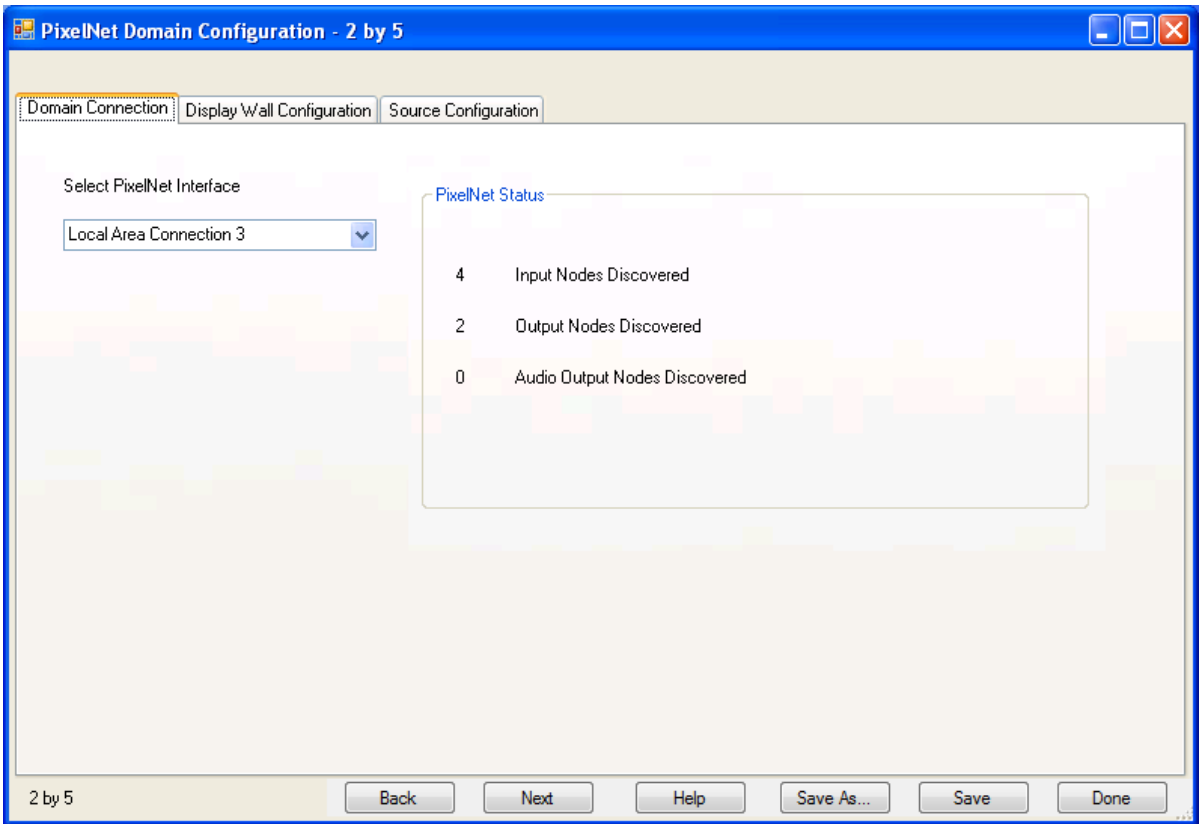


Figure 49 - Domain Connection tab—Selecting PixelNet Interface

2. Once a Domain Connection is made, click **Save** to save the configuration.
3. Click **Next**, or click the **Display Wall Configuration** tab to advance to the next step.

5.3 The Display Wall Configuration Tab

The **Display Wall Configuration** page displays the following sections:

- **Output Nodes:**
  - **Video Tab:** List of discovered output nodes
  - **Audio Tab:** List of discovered audio nodes
- **Wall Configuration:**
  - **Buttons: +** to add a wall, **-** to delete current wall
  - **Display Wall Tabs:** Displays wall names (when saved)
    - **Display Wall Name:** User defined
    - **Resolution:** Drop-down menu of supported resolutions
    - **Screens X:** Number of horizontal displays
    - **Screens Y:** Number of vertical displays
    - **Display wall mimic:** The mimic (blue rectangles) represents the display wall in rows and columns as selected from the **Screen X** and **Y** lists.

The Display Wall Configuration Tab

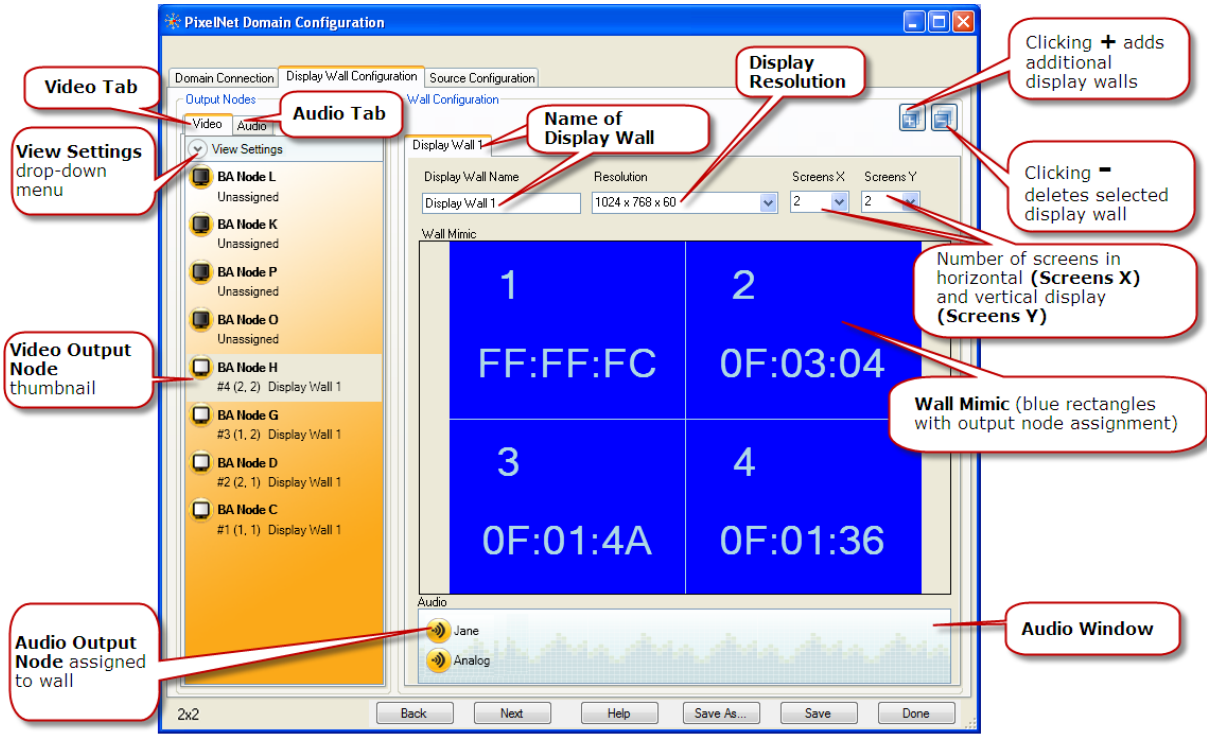


Figure 50 - Display Wall Configuration tab

5.3.1 Output Nodes

The left side of the Display Wall Configuration tab has the **Output Nodes** section. The Output Nodes section has two tabs—**Video** and **Audio**—to distinguish nodes by their signal capabilities.

The **Audio Output Nodes** are listed with the following identification information available within the node icon square:

- Node Name
- Ethernet MAC address

The audio output nodes are also listed as thumbnails in the main section under the assigned video output nodes. Audio thumbnails also display the Name and Ethernet MAC address along with an icon that displays the operational status as playing or muted.

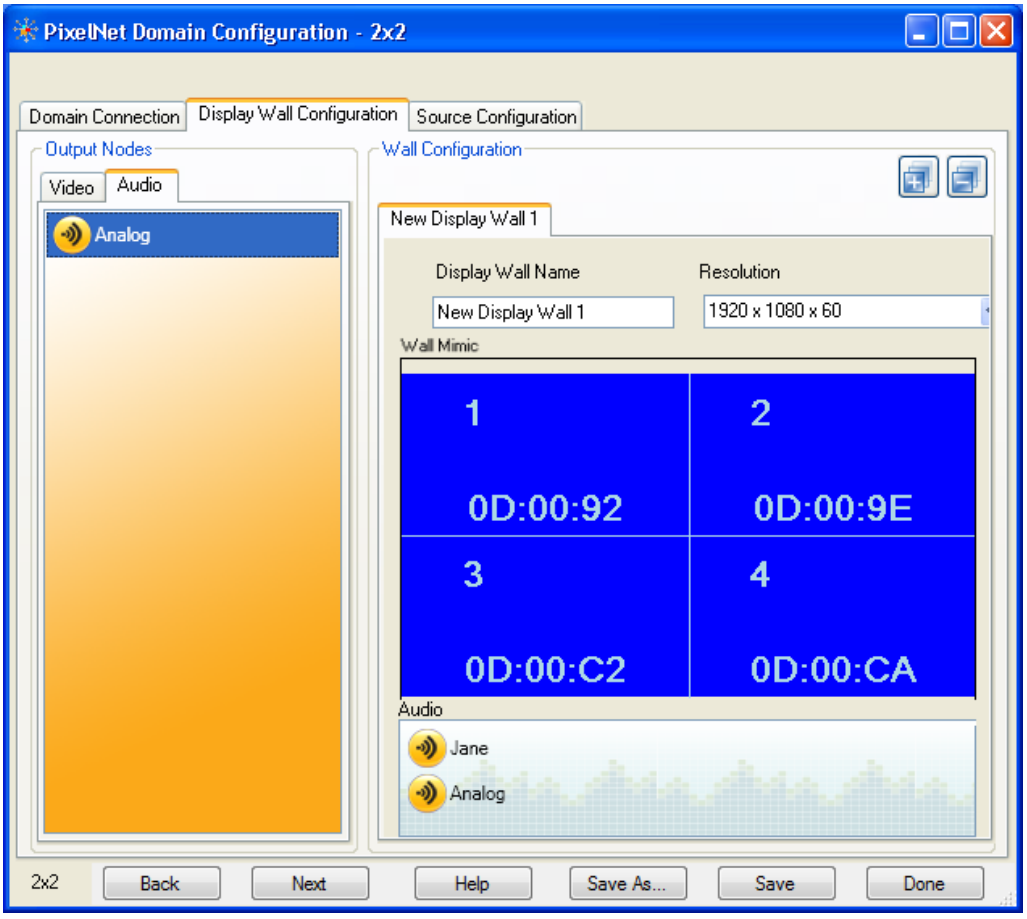


Figure 51 - Display Wall Configuration—Audio Tab

The **Video Output Nodes** will display and sort information based on the Display Options chosen.

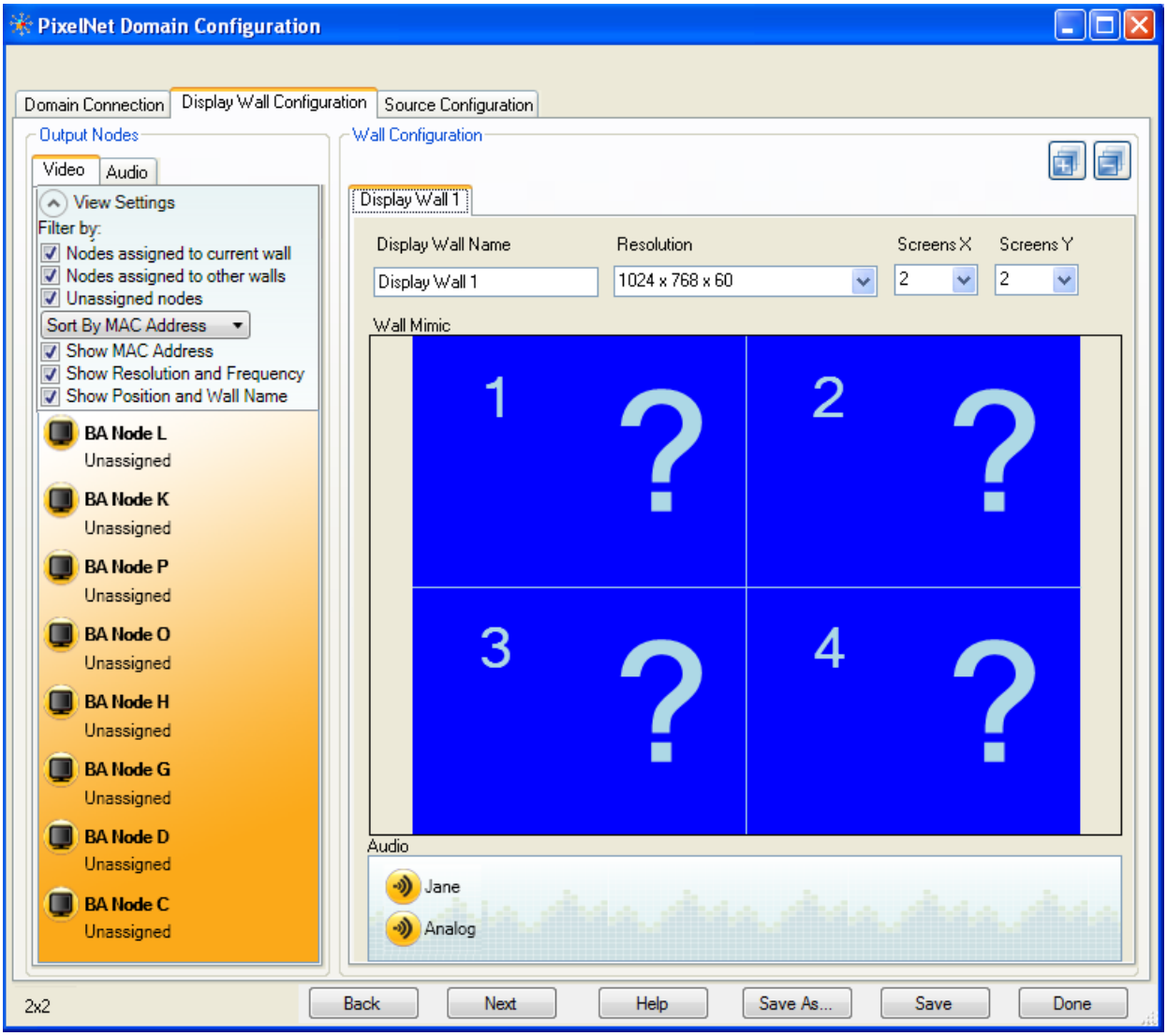


Figure 52 - Display Wall Configuration—Video Tab

5.3.1.1 Display Options

Sorting Options

The Video Output Nodes list can be sorted and viewed in two different perspectives. Click the down arrow below the **Video** tab to view the sorting options in the drop-down menu:

- **Sort By Name:**

  Sorts the list of nodes alphabetically by name.

- **Sort By MAC Address:**

  Sorts the list of nodes by MAC Address.

Note Check box options are not part of the drop-down menu; however, they can only be accessed by clicking the **View Settings** menu.

Check Box Options

In addition to the sorting options, choose from seven check box options where each option displays one or more unique attributes regarding the nodes.

- **Nodes Assigned to current wall** (selected by default):

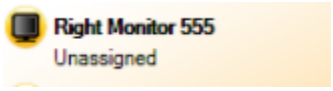
  This filtering option shows only the nodes assigned to the current wall.

- **Nodes Assigned to other walls** (selected by default):

  This filtering option shows only the nodes assigned to other walls.

- **Unassigned nodes** (selected by default):

  This filtering option shows only the unassigned nodes. If the node is unassigned, a black monitor icon appears before the Node Name along with a classification below as *Unassigned*.



- **Show Resolution** (selected by default):

  This option shows the resolution and refresh rate of the node.

- **Show MAC Address** (selected by default):

  This option shows the MAC address of the node.

- **Show Position and Wall Name** (selected by default)**:**

  Shows the current assignment of output. The assignment is listed in the form of a rectangle position, counted left to right, from the top left corner, starting at 1.

  This option also shows the name of the Display Wall to which the node is assigned.

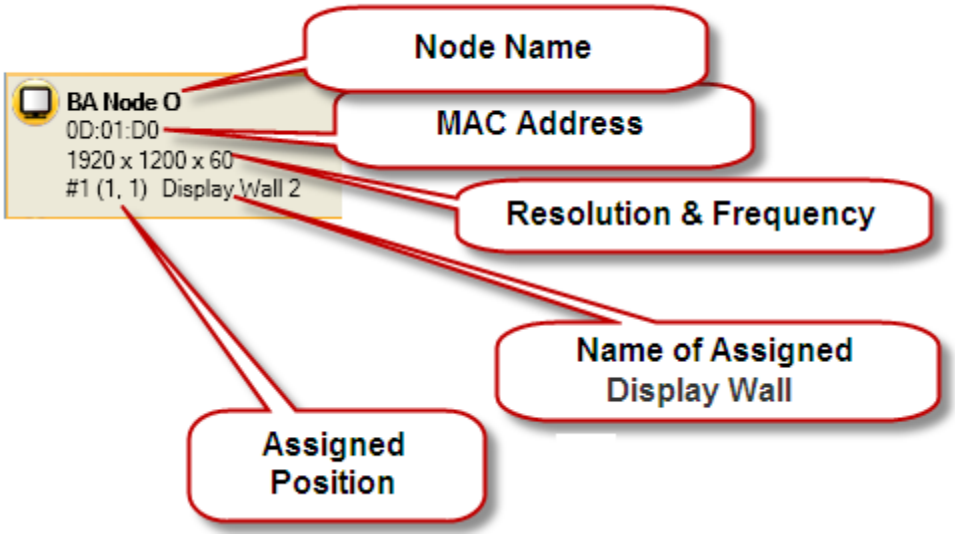


Figure 53 - Video Node Check Box Options

Select/deselect the check box options by clicking the check box next to each option.

The right-click context menu on the node list includes **Properties** which is detailed under **"Output Properties Dialog" on page 63**.

5.3.1.2 Audio Output Properties— Node Tab

Right-click on an Audio output node to open the **Properties** menu.

- **Properties—**This menu item launches the Audio Output Properties dialog.

Node Tab—Audio Output Node Info

The selected audio output node name appears in the **Name** field, along with the node's **MAC** address. Upon initial start up, the name field will be blank.

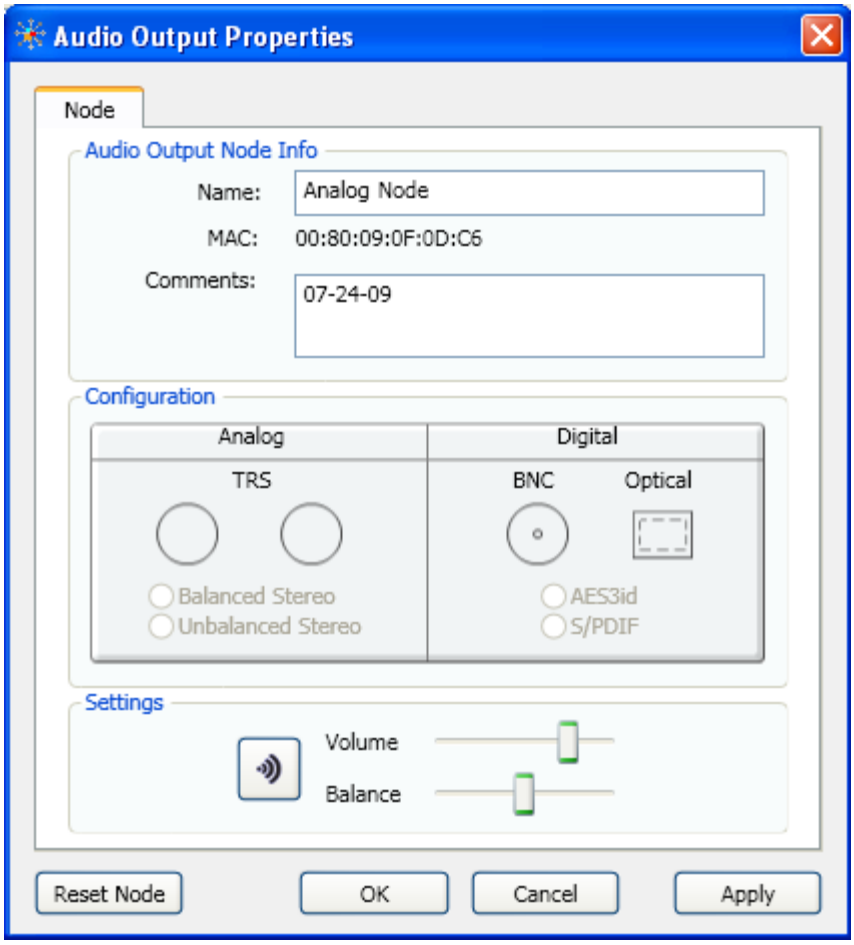


Figure 54 - Audio Output Properties—Node Tab

In order to change the output node name:

1. Enter the new name in the **Name** field.
2. Click **OK** to register the changes.

The **Comments** field is for entering user selectable information such as, node location.

Analog / Digital Settings
The settings in the Analog and Digital sections define the audio quality and the level of attenuation required.

Analog
TRS: Tip Ring Sleeve (TRS) connectors are common audio jack connectors. Under this type of connection, the Audio output node offers the following options:

- **Balanced Stereo:** Balanced outputs can be driven up to 10.88V. The Digital-Analog Converter (DAC) in the node has a built-in attenuator, programmable in 0.5dB steps, so that sound can be adjusted to avoid distortions.
- **Unbalanced Stereo:** Unbalanced outputs can be driven to 12.51V.

Digital
For digital connections, the Audio output node currently offers a wired option, whereas Optical connections will also be supported in the future.

BNC: The Bayonet Neill-Concelman (BNC) connector is a common connector used for terminating coaxial cable.

- **S/PDIF:** The official name is IEC60958 Type II unbalanced, but Sony/Philips Digital Interface (S/PDIF) is a more common name. The audio range is very good with this solution.

5.3.2 Output Properties

Right-click on an output node to open the **Properties** menu. Double-clicking on a display also opens the **Properties** menu.

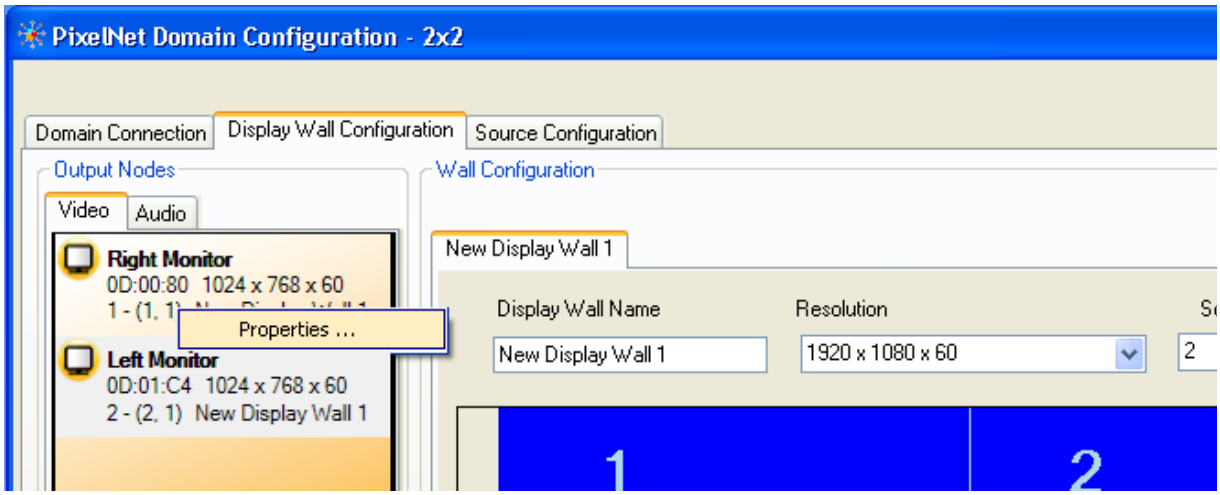


Figure 55 - Output Node—Properties

- **Properties—**This menu item launches the **Output Properties Dialog**.

5.3.3 Output Properties Dialog

The **Output Properties** dialog allows making settings specific to the selected output node.

Buttons:

- **Reset Node**—Click this to reset the properties of the node. Restart PDC after resetting a node.
- **OK**—Click this to load changes made to one or more tabs and close the dialog.
- **Cancel**—Click this to cancel changes to the specific tab, but continue with the other tabs without closing the entire dialog.
- **Apply**—Click this to apply the changes made on the specific tab, and continue with the other tabs without closing the entire dialog.

5.3.3.1 Node Tab

Output Node Info

The node name is saved in the node as well as in the configuration. The selected output node name appears in the **Name** field, along with the node's **MAC** address. Initially, the name field is left blank. Enter a name that represents the corresponding wall position of the display.

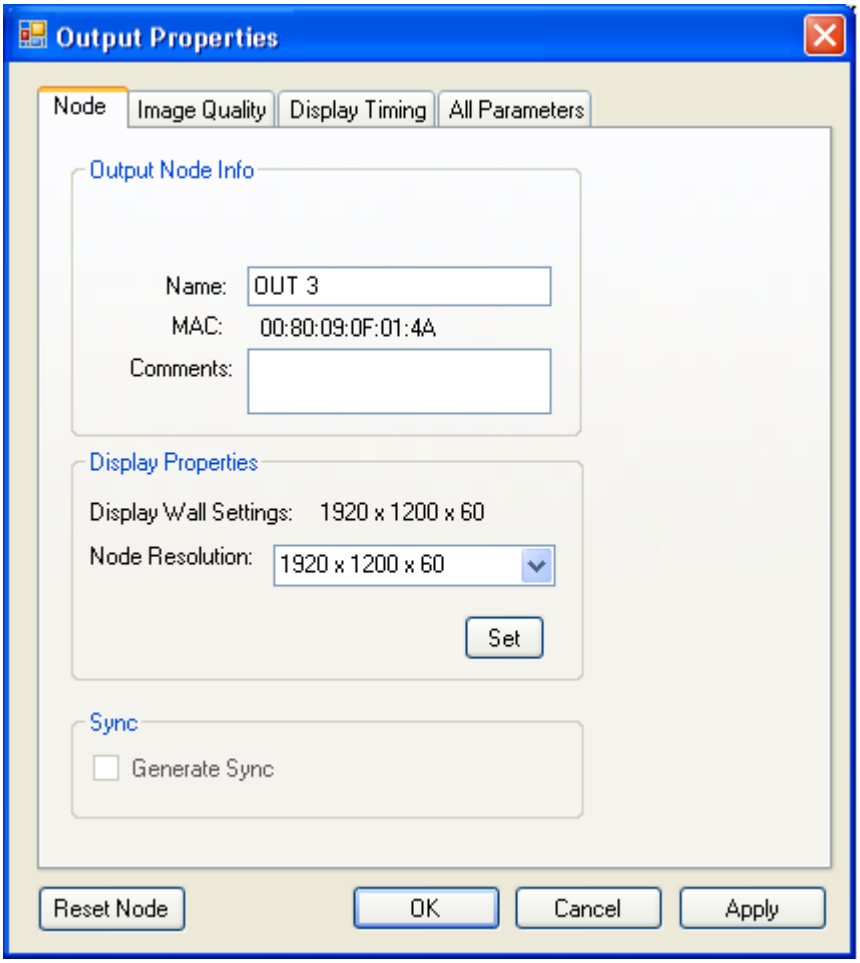
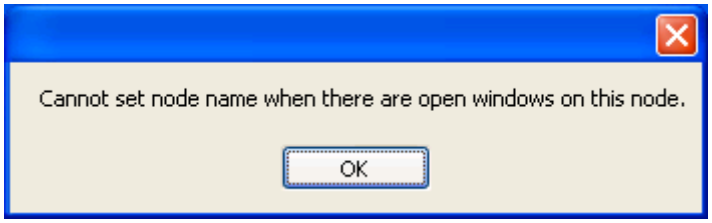


Figure 56 - Output Properties—Node Tab

Note For configuring the wall you just need to name the node. The rest of the **Output Properties** deal with adjustments that are not essential for configuration. Proceed to **"Wall Configuration" on page 73** to continue with the configuration.

Close all windows associated with this node before changing the name. Attempting to change the name while the windows are open will prompt the following error message:



In order to change the output node Name:

1. Click **OK** on the above message.
2. Close all of the open windows on the display wall related to the node.
3. Enter the new name in the **Name** field.
4. Click **OK** to register the changes to close the **Output Properties** dialog.

The **Comments** field is for entering user selectable information such as, node location.

Display Properties
In the **Display Properties** section, the first line shows the output resolution setting for the wall. The **Node Resolution** drop-down field allows changing the resolution setting for the selected output node. Click the **Set** button to register the change.

Caution The **Output Node Resolution** must be the same as the **Display Wall** setting.

Sync
The output node in the display wall position, **1** is automatically designated as a Master Sync node. Sync information is covered in detail in Chapter 2. Refer to **"SYNC Port" on page 15** for detailed information.

5.3.3.2 Image Quality Tab

The **Image Quality** page offers controls for Brightness, Contrast, Hue, and Saturation.

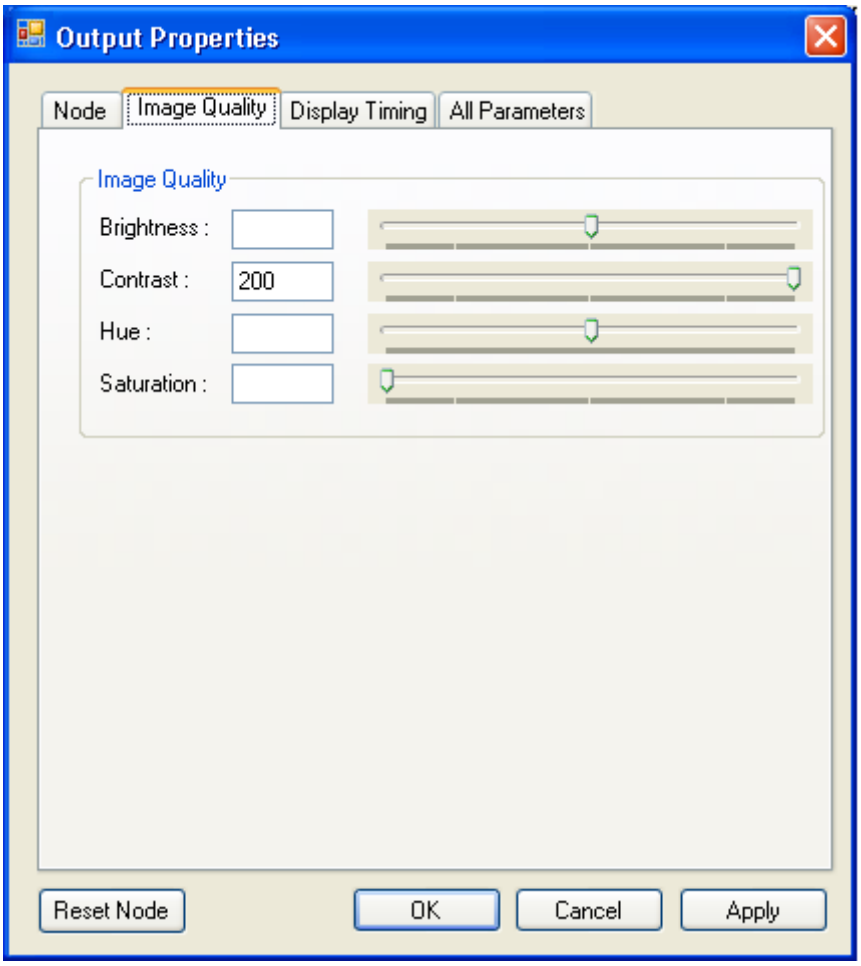


Figure 57 - Output Properties—Image Quality Tab

Brightness

Set the desired image brightness by clicking on and selecting the Brightness slider control. Brightness can be set from –100 to +100%. Brightness changes the image from a very dark image on one end to a very bright on the other end.

Contrast
Set the desired image Contrast by clicking on and selecting the Contrast slider control. Contrast can be set from 0 to 200%.

Hue
Set the desired image hue by clicking on and selecting the Hue slider control. Hue can be set from –180 to +180 degrees. Hue changes the color balance of the image from green on one end to purple on the other end. Hue is not supported under the PAL format, and is not available as an option for RGB windows.

Saturation
Set the desired image saturation by clicking on and selecting the Saturation slider control. Saturation can be set from 0 to 200. Saturation changes the image from no color (black and white) to very saturated colors. Saturation is not available as an option for RGB windows.

5.3.3.3 Display Timing

Selecting the **Display Timing** tab, opens the following page:

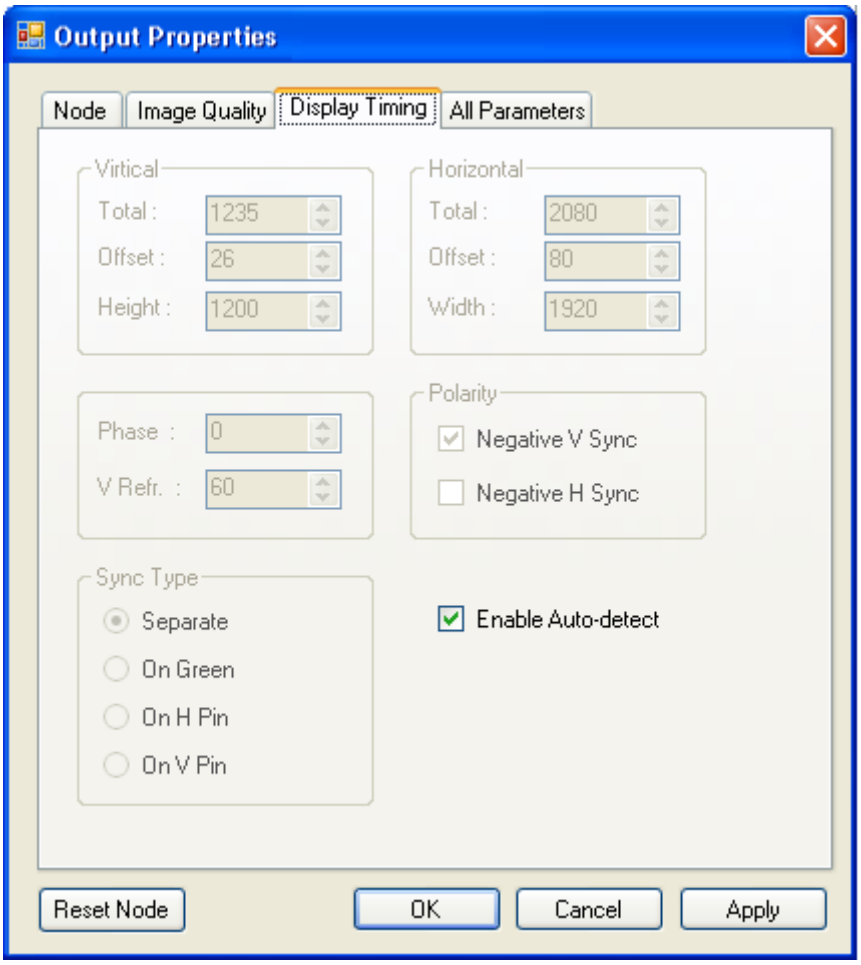


Figure 58 - Output Properties—Display Timing Tab

Vertical – Total

The Vertical Total parameter adjusts the total vertical timing. Vertical Total includes both the visible pixels and the retrace (or blanking) time.

Vertical – Offset

Vertical Offset has a range of from 1 to 200 and has the effect of positioning the image vertically within the display.

Vertical – Height
The Height parameter adjusts the displayed number of lines. The Height parameter usually will not need to be adjusted, except for an unusual signal. In most cases, blank lines will display.

Horizontal – Total
The Horizontal Total parameter adjusts the total number of pixels in a line. Horizontal Total includes both the visible pixels and the retrace (or blanking) time.

Horizontal – Offset
Horizontal Offset has the effect of positioning the image horizontally within the display.

Horizontal – Width
The width parameter adjusts the displayed number of pixels. The Width parameter usually will not need to be adjusted. In most cases, blank pixels will display.

Sync Type
Sync Type shows what type of sync pulse is detected. Sync types are shown below:
1. On H pin - Sync on Horizontal pin
2. On Green - Sync on Green
3. Separate - Horizontal on H pin, Vertical on V pin
4. On V Pin - Sync on Vertical pin

The table below shows the connector pin containing the sync signal for the various sync types shown.

Table 1: Sync Type

	Separate	On Green	On H	On V
H Sync	**H pin**	**G pin**	**H pin**	**V pin V Sync**
V Sync	**V Pin**	**G pin**	**H pin**	**V Pin**

Phase
Phase adjusts the sample time on the pixel clock.

Vertical Refresh sets the scan rate. This setting has a range of from 0 to 60 Hz. Usually there is no need to set this, as it is set from the input signal.

Polarity
The **Negative VSync Polarity** (vertical sync) check box sets the polarity of the vertical sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

The **Negative HSync Polarity** (horizontal sync) check box sets the polarity of the horizontal sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

Enable Auto-detect
The Auto-detect function, when enabled, forces a lookup of VESA timing whenever the **HActive, VActive,** or **VSync Rate** properties change.

5.3.3.4 All Parameters

The All Parameters page displays all the available node Properties and their associated Values.

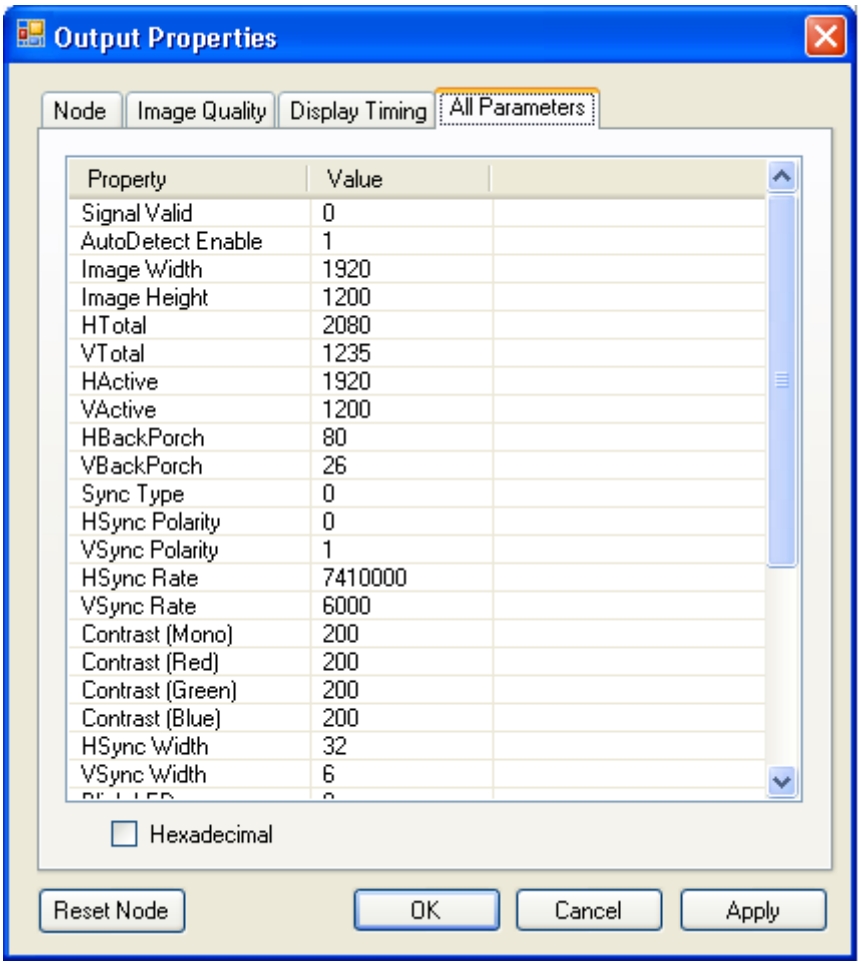


Figure 59 - Output Properties—All Parameters Tab

- To view the Hexadecimal values of the properties, click the **Hexadecimal** checkbox.
- To change the property value, double-click the chosen property to access the **Change Property** dialog as shown in **"Figure 60"**. If it is not a read-only property, it can be modified in the **Value** field.

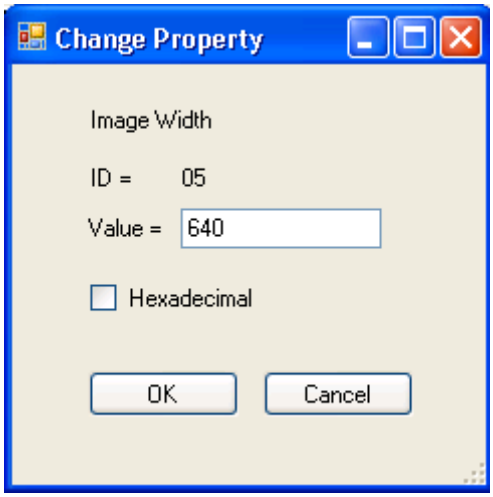
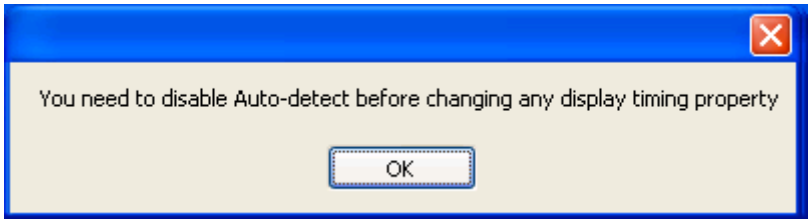


Figure 60 - Change Property Dialog

Refer to **"PixelNet Node Properties" on page 197** for more information on node properties.

Attempting to edit the value of any **Display Timing** property when **Auto Detect** is enabled (i.e. set to ***1***, as shown in the **"Figure 59" on page 71**), will result in the following error message:



Turning off Autodetect

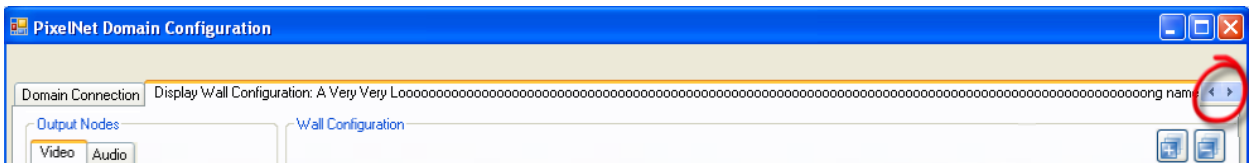
In order to edit property values, set the **AutoDetect Enable** value to ***0***.

5.3.4 Wall Configuration

The Wall Configuration section has the following fields:

- **Display Wall Name:** Provide a name for this wall configuration such that it holds all the current information about the display wall, for example: number of columns and rows, assignment of output nodes, display resolution setting, default data format, and network configuration.

  The name entered in this field will appear in the Display Wall Configuration tab when the **Apply** button is clicked. The name can be quite long, however, should the name go beyond the width of the Configuration window dialog, left and right arrows appear for scrolling the tabs (as shown below).


PixelNet Domain Configuration
Domain Connection
Display Wall Configuration: A Very Very Looooooo

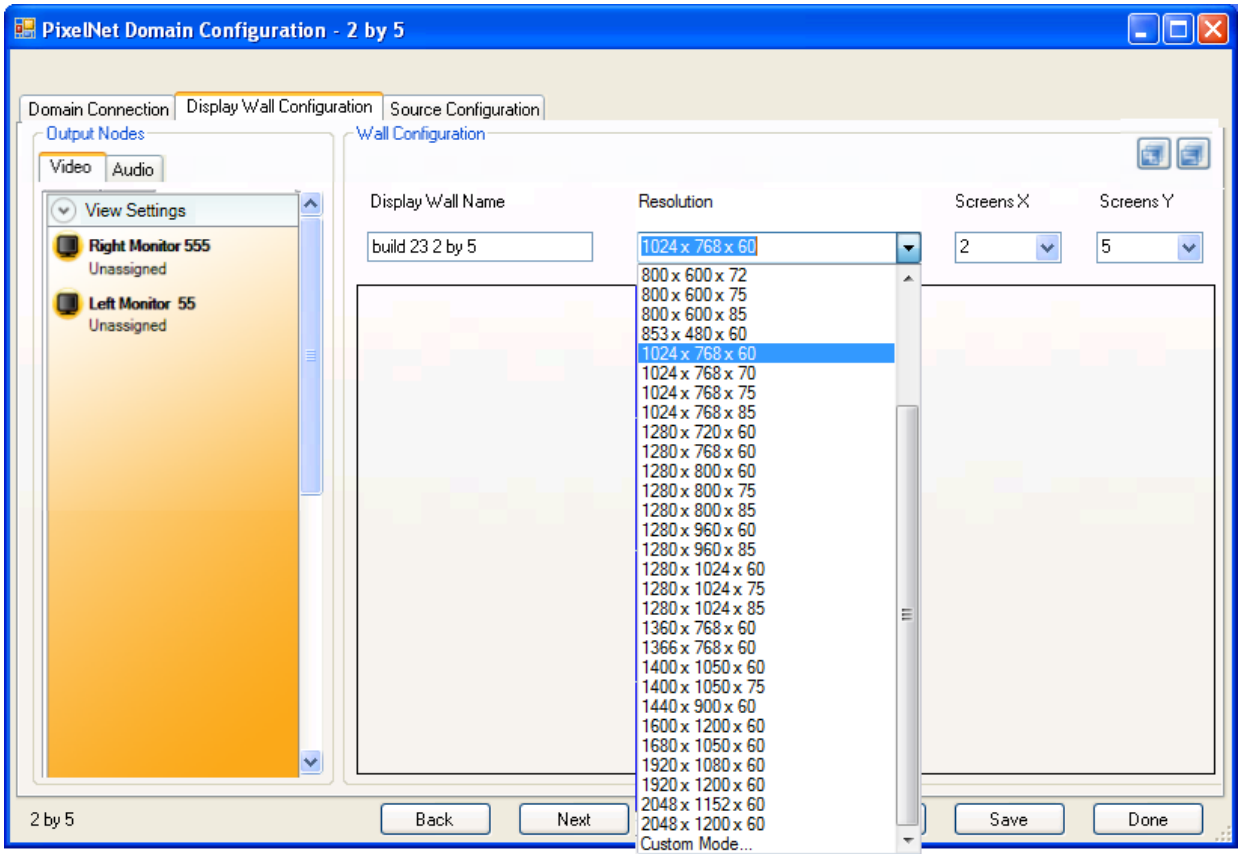


Figure 62 - Set Display Resolution

Note The Display Resolution must be the same as the native resolution of the displays used in the display wall. Failure to do so will affect the quality of the display.

- Proceed to **"Assigning Nodes to Displays " on page 86**, ***unless*** the chosen resolution is **Custom Mode**.
- Select, **Custom Modes** at the bottom of the **Resolution** drop-down list, *only* if none of the resolution options meet your display specifications.

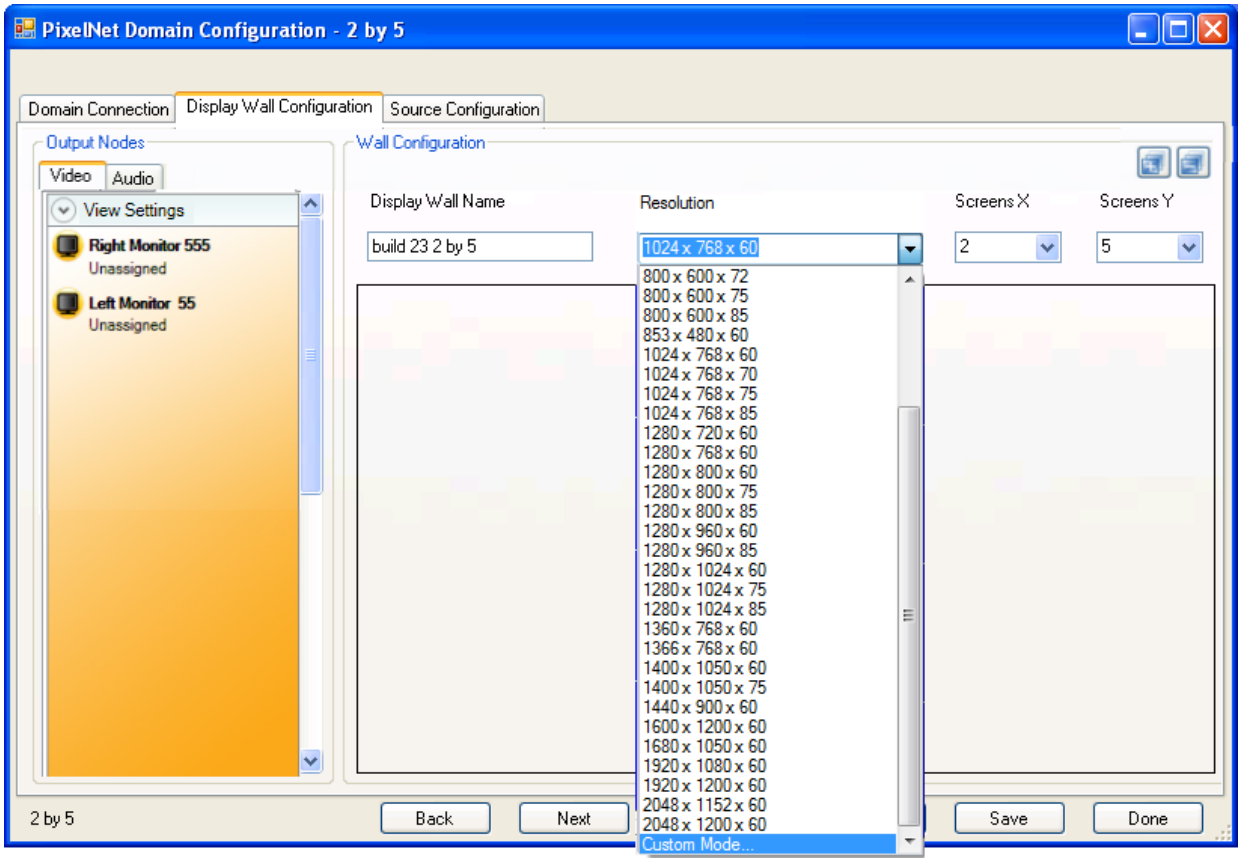


Figure 63 - Custom Mode Resolution

5.3.4.1 Custom Modes

The **Custom Display Modes Configuration** dialog appears when **Custom Modes** is chosen in the **Resolution** field as shown in the previous figure. This dialog allows the creation of custom display resolutions that are not part of the standard resolution options.

Note Proceed to "Assigning Nodes to Displays " on page 86, unless the chosen resolution is **Custom Mode**.

The Custom Display Modes will be saved in “C:\Program Files\Jupiter\PDC\Config\CustomModes.xml”.

The first time Custom Display Mode runs, an empty Display Modes list appears as shown in the figure below:

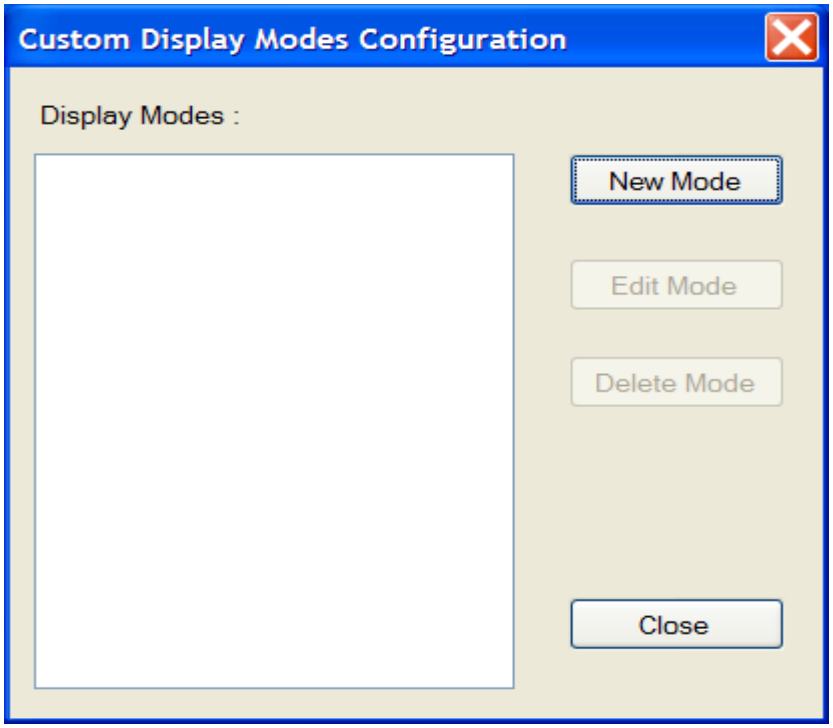


Figure 64 - Custom Display Modes Configuration

1. Click the **New Mode** button to bring up the entry dialog shown below.

2. Enter the **Width** and **Height** values in pixels. Refer to the resolution required by your display device.

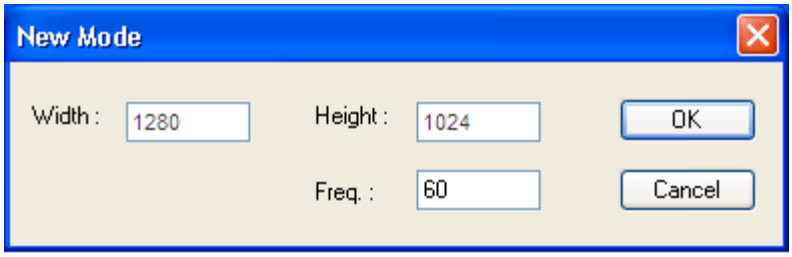


Figure 65 - New Mode

3. Enter the refresh frequency (Hz) required by the display device in the **Freq.** field.

4. Click the **OK** button. Once you enter the basic information and click OK, you will see the **Display Timing** dialog shown on the following page.

The **Display Timing** dialog shows the timing parameters for the resolution you have defined.

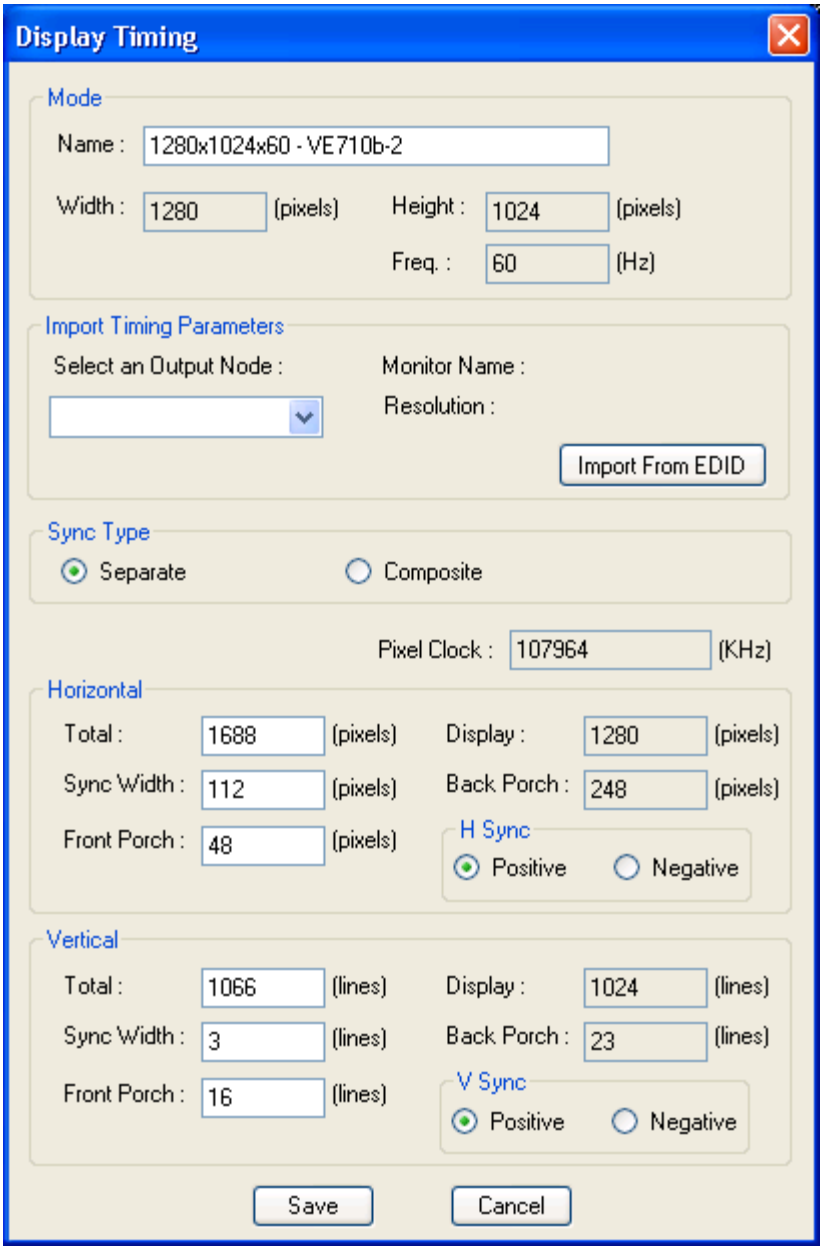


Figure 66 - Display Timing

The default name of this custom mode is given as Width x Height x Frequency. You can modify it to a more descriptive name if you desire. Once the name is saved, the mode name will appear in the Node Resolution list followed by an asterisk.

5.3.4.2 Import Timing Parameters

The **Import Timing Parameters** section allows you to select an output node from the drop-down menu. The selected node's name and resolution settings will display on the right side in the **Monitor Name** and **Resolution** fields.

Import From EDID

Once you select an output node, click the **Import From EDID** button to populate the **Display Timing** dialog fields from the selected output node.

The following dialog appears:

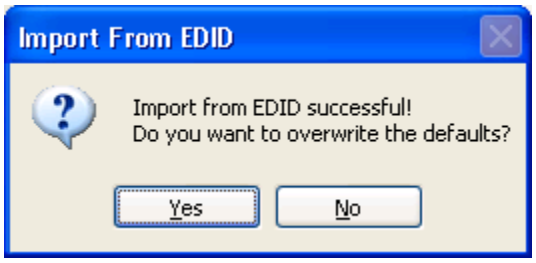


Figure 67 - Import from EDID Dialog

5. Choose **No**, if you want to keep the default values. Choose **Yes**, to keep the EDID values.

The **Display Timing** dialog appears with the imported EDID values as shown below:

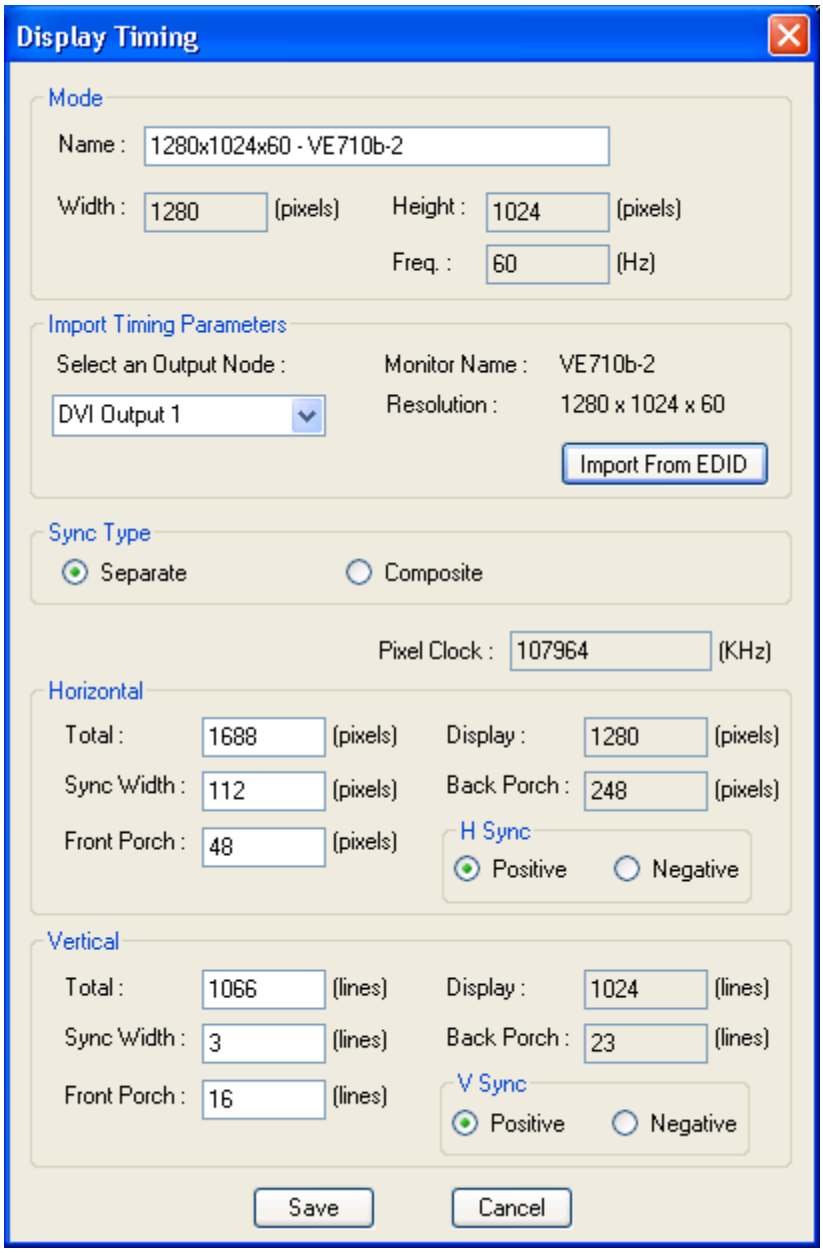


Figure 68 - Display Timing—Import from EDID

Note Items on the right of the **Display Timing** dialog are grayed out (read-only) because they are derived from either the new entries or the imported EDID settings.

6. Click the **Save** button. You will get the confirmation dialog shown below.

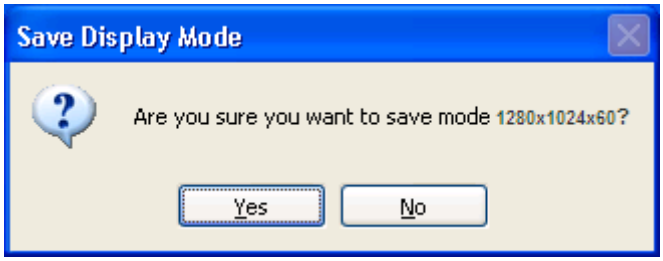


Figure 69 - Save Display Mode Dialog

7. Click **Yes**.

   Once you save your new resolution, it will appear in the **Display Modes** list as shown below:

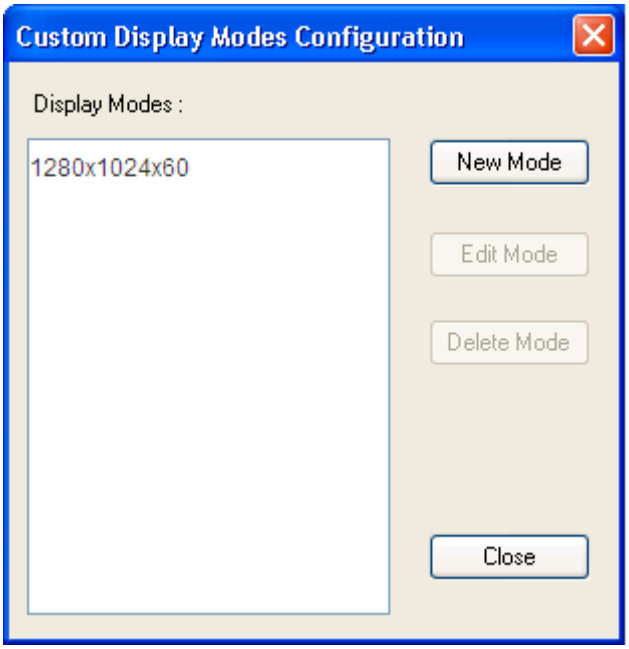


Figure 70 - Display Modes List

5.3.4.3 Edit Custom Mode

To edit a Custom Mode you must first select it in the **Display Modes** list and click the **Edit Mode** button.

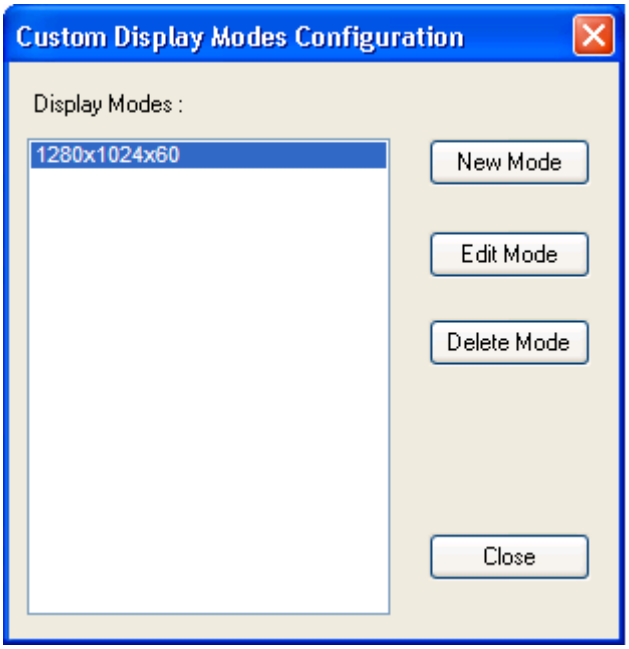


Figure 71 - Edit Node

Enter the exact settings required by the display devices being used. The edit mode allows you to refine the basic settings until you reach the settings that give you a stable full screen display.

The **Display Timing** dialog appears as shown below:

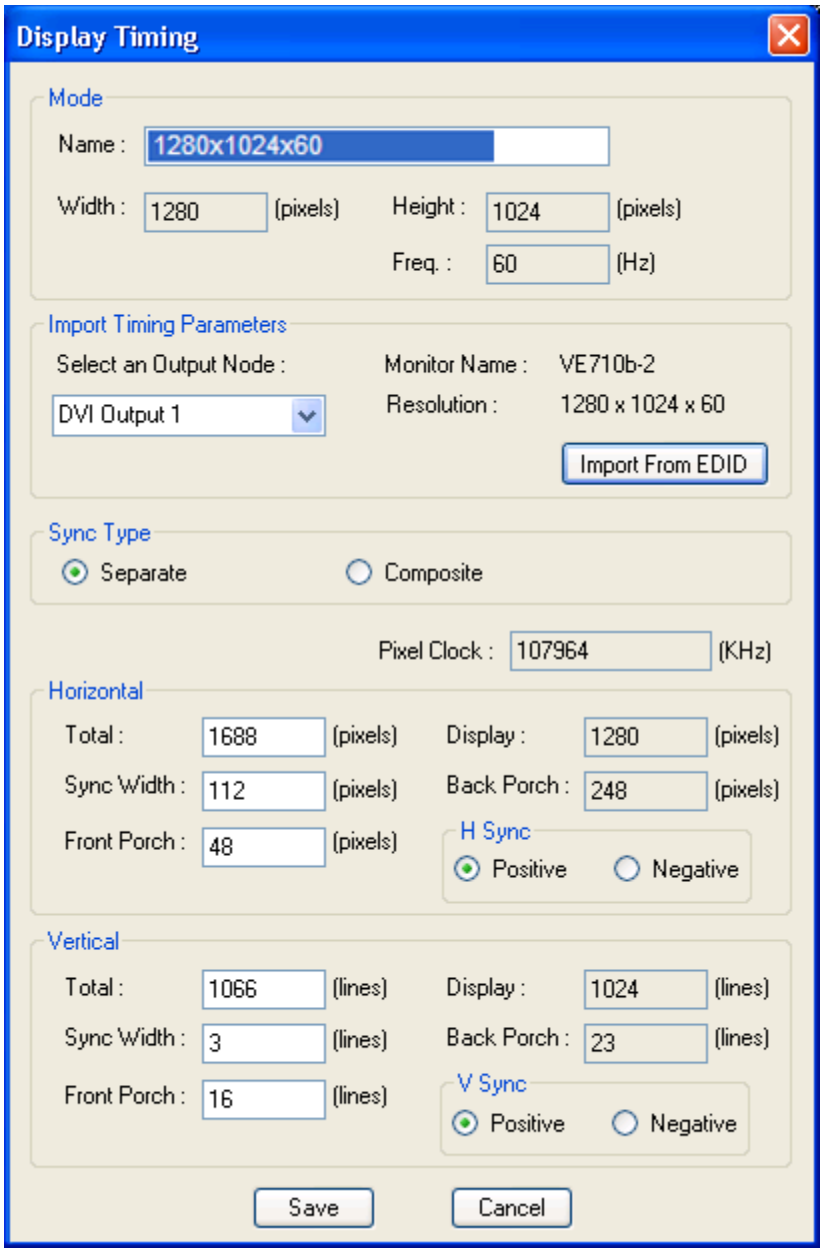


Figure 72 - Display Timing (Edit Mode)

Note Items on the right of the **Display Timing** dialog are grayed out (read-only) because they are derived from either the new entries or the imported EDID settings.

After saving the Custom Display Mode, it will materialize in the **Resolution** drop-down menu (in the **Display Wall Configuration** tab of the **PixelNet Domain Configuration** dialog) with an asterisk (*) at the end.

5.3.4.4 Delete Custom Mode

To delete a custom mode, you must first select it in the **Display Modes** list and then click the **Delete Mode** button.

A confirmation dialog is displayed as shown below:

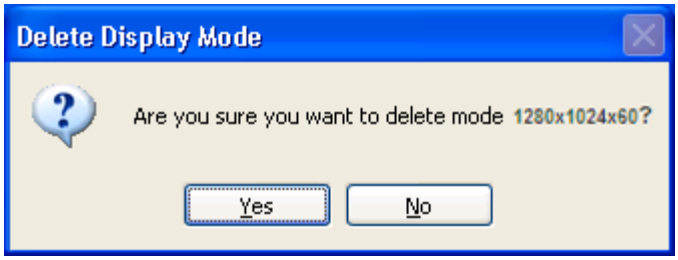


Figure 73 - Delete Custom Mode

5.3.4.5 Parameter Listing

The Parameter listing for the Custom Display Mode is given below:

Table 2: Parameter Listing

Parameters	Unit	Description
Mode		
Width	pixels	Width of visible pixels
Height	pixels	Height of visible pixels
Freq	Hz	Vertical display frequency
Pixel Clock	KHz	Speed of pixel clock
Sync Type		Separate, Composite
Horizontal		
HTotal	pixels	Total pixels horizontal
HDisplay	pixels	Total Displayed pixels horizontal
HSyncWidth	pixels	Width of horizontal sync
HBackPorch	pixels	Width of horizontal back porch
HFrontPorch	pixels	Width of horizontal front porch
Hsync (Positive – Negative)		Set Positive or Negative sync pulse
Vertical		
VTotal	lines	Total pixels vertical
VDisplay	lines	Total Displayed pixels vertical
VSyncWidth	lines	Width of vertical sync
VBackPorch	lines	Width of vertical back porch
VFrontPorch	lines	Width of vertical front porch
VSync (Positive – Negative)		Set Positive or Negative sync pulse

5.3.5 Assigning Nodes to Displays

Up to this point the nodes have been discovered and the wall has been configured. At this stage the system knows about output nodes but does not know which node is attached to which display in the display wall. The purpose of this stage in the configuration process is to make this node-to-display assignment. In order to accomplish this step, you should have visual contact with the wall.

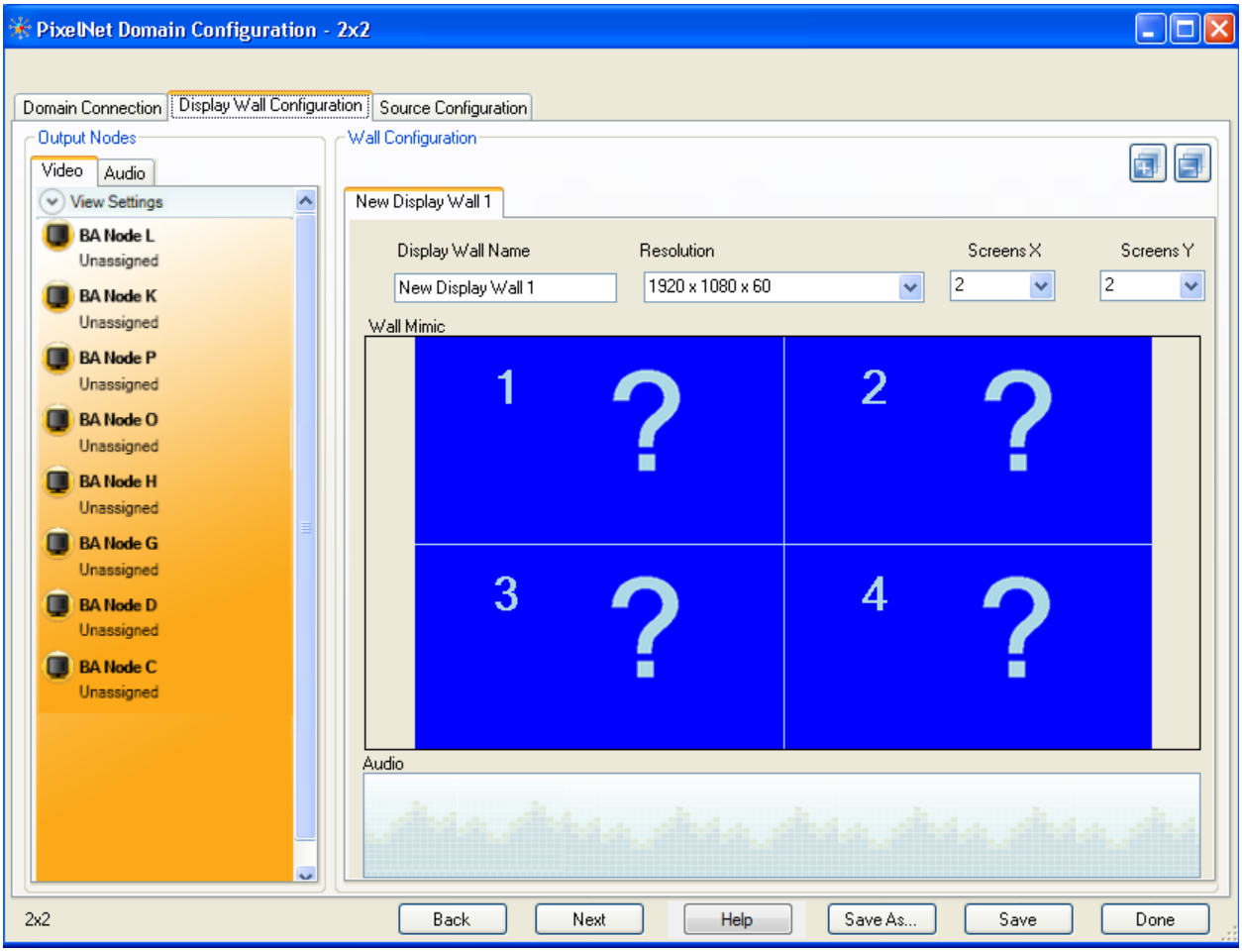


Figure 74 - Wall Mimic

The **Wall Mimic** area (blue rectangles) now describes the wall as configured in the Screen X and Screen Y settings. The rectangles will be numbered in the default manner as described earlier. The white question mark (?) in these rectangles indicates that the node has not been assigned to a display in the display wall.

Default display wall numbering is shown below:

1	2	3	4
5	6	7	8

Each blue rectangle represents a display device on the display wall. The position of each rectangle will correspond to the exact position of the display device in the wall (1, 2, 3, 4, etc.).

5.3.5.1 To assign a Video node perform the following:

1. Select an Output Node icon from the Output Nodes section **Video** list. Click on one of the output node rectangles, it will be highlighted in white, the Jupiter logo will appear in one of the displays in the wall as shown in **"Figure 75" on page 87**.

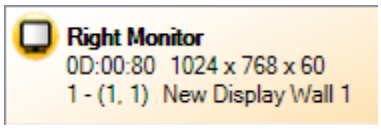
Figure 75 - Display Wall Configuration—Assigning Outputs

2. As the mouse pointer hovers over the potential rectangle display, a yellow color highlights it. Drag the selected Output Node icon to the display wall mimic. The logo appears as a prompt to drop the dragged node on that rectangle, i.e. the node is officially assigned with a position number on the upper left corner.

   As the icon is dropped on the mimic, the following happens:

   - the question mark will disappear,
   - the display in the wall will have the number corresponding to the number of the mimic rectangle,
   - the mimic rectangle will have the MAC address of the output node now associated with the display:

   - the node icon will show the wall position as position number and array position; the monitor icon next to the Output name will turn from black to white in the node to indicate that it has been assigned. The Unassigned label will also disappear.



3. Continue selecting and dragging the output node thumbnails to the wall mimic rectangles until all nodes have been assigned.

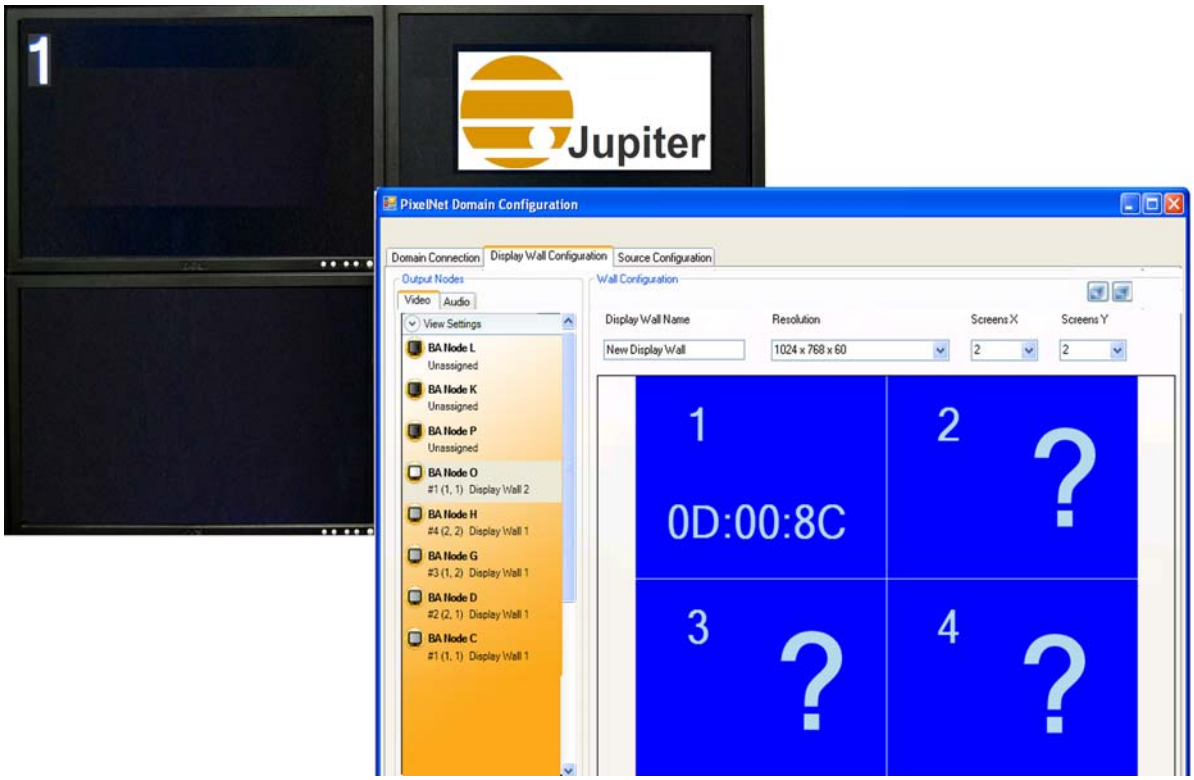


Figure 76 - Matching Position

Note	If the node icon is dropped on the wrong mimic display rectangle, right-click the rectangle and select **Unassign**. Drag the node icon to the correct mimic display rectangle.

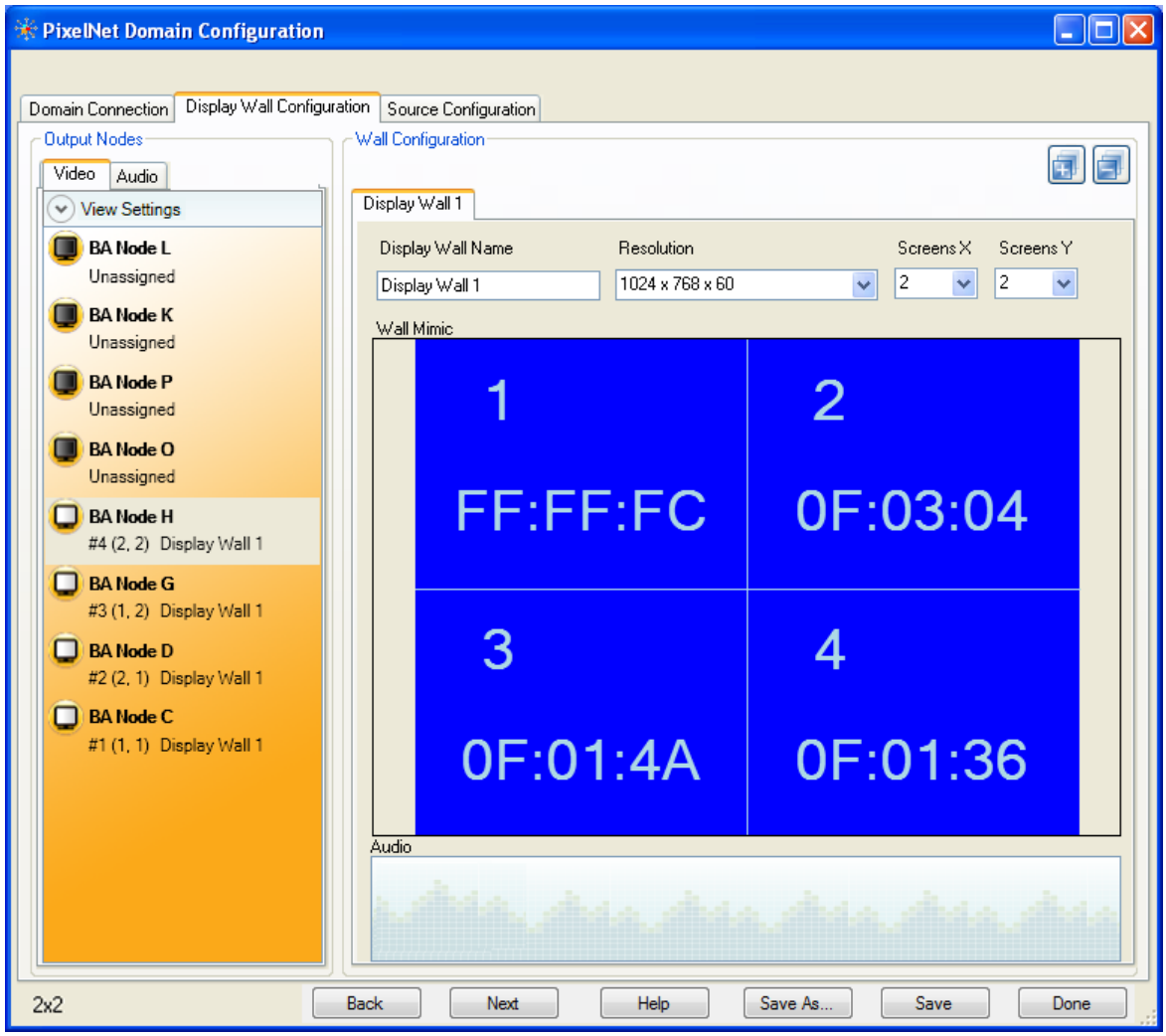


Figure 77 - Display Wall Configuration tab—After Assigning Outputs

After assigning the nodes, the mapped outputs on the display wall will resemble **"Figure 78"** below, displaying the position numbers of each node.

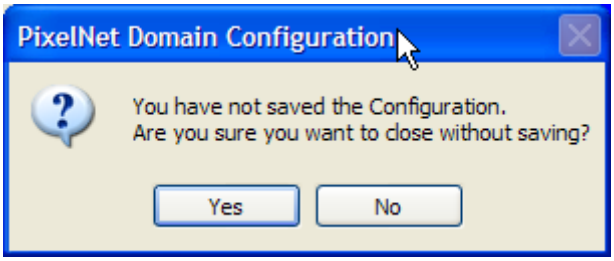
Figure 78 - Mapped Output—Display Positions

4. After the assignment is completed, there are two choices:
   - Click **Next** to go on to **Source Configuration Tab**.

     or
   - Assign an audio node to the display wall as detailed on **page 92**.

     While video output nodes are assigned to specific display assignments on the wall, audio output nodes are assigned to the display wall itself. Back in the display wall mimic, audio sources containing the assigned audio node can be saved to a specific layout.

Clicking **Next** before clicking **Save**, will prompt the following message:


PixelNet Domain Configuration
You have not saved the Configuration.
Are you sure you want to close without saving?
Yes
No

- Click **Yes** to proceed to **Source Configuration Tab** without saving the Display Wall Configuration.
- Click **No** to go back and save the Display Wall Configuration.

5.3.5.2 To assign an Audio node perform the following:

1. In the **Output Nodes** section, click the **Audio** tab.
2. From the list of audio nodes, select the audio output node to be assigned to the wall.
3. Drag and drop the selected audio node in the **Audio Window** below the blue rectangles. The **Audio Window** will display the assigned audio output nodes with an audio icon followed by the node name.

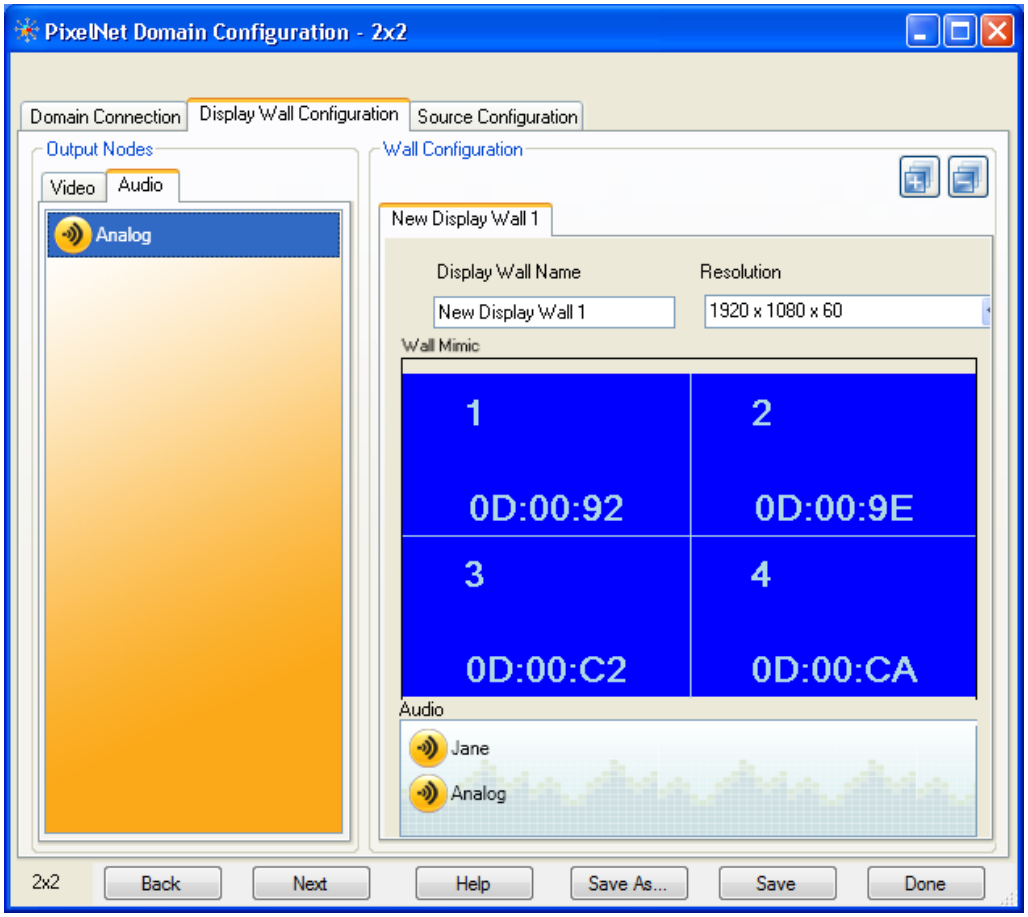


Figure 79 - Display Wall Configuration—Audio Tab

- Icon indicating audio in play mode:

- Icon indicating a muted audio node:

Note	This icon is actually a button. Clicking on the button toggles the audio state between play and mute and changes the icon.

5.3.5.3 Window Right-click Context Menu

The Window right-click context menu on the mimic includes:

- Un-assign Node: Un assigns a specific node.
- Un-assign All Nodes: Un assigns all the nodes.

Click **Unassign** *only* to dissociate the nodes from their mapped display windows.

The **Display Wall Name** is used for identification and program reference; hence, it must be unique in the PixelNet Domain.

Note	Selecting a specific resolution will not set that resolution on assigned outputs. The actual resolution is set when the Domain Configuration is loaded.

5.4 Understanding Channel, Stream, and Source

Understand the following terms before proceeding with the **Source Configuration** tab:

Node
A **Node** is an active electronic device that is attached to a network, and is capable of sending, receiving, or forwarding information over, to, or from that network.

Channel
A **Channel** is a physical connector on a PixelNet Node where input is supplied to PixelNet or Output is supplied to display devices. Nodes can have zero or more channels as shown in **“Figure 80” on page 95**.

Stream
A **Stream** is an ordered sequence of Ethernet frames containing PixelNet protocol packets. Each stream contains an ordered list of digitized audio/video data which can be reconstituted to its original form using an Output node. ***A Stream is generated from a single Channel of a PixelNet input Node.***

Source

A **Source** is a logical construct in PDC representing one or more Streams directed from one or more Channels, to be rendered in a Window. There are four different kinds of sources possible in PDC:

- Single Source
- Grouped Source
- Ganged Source
- Cloned Source

This section will illustrate and distinguish the four Sources.

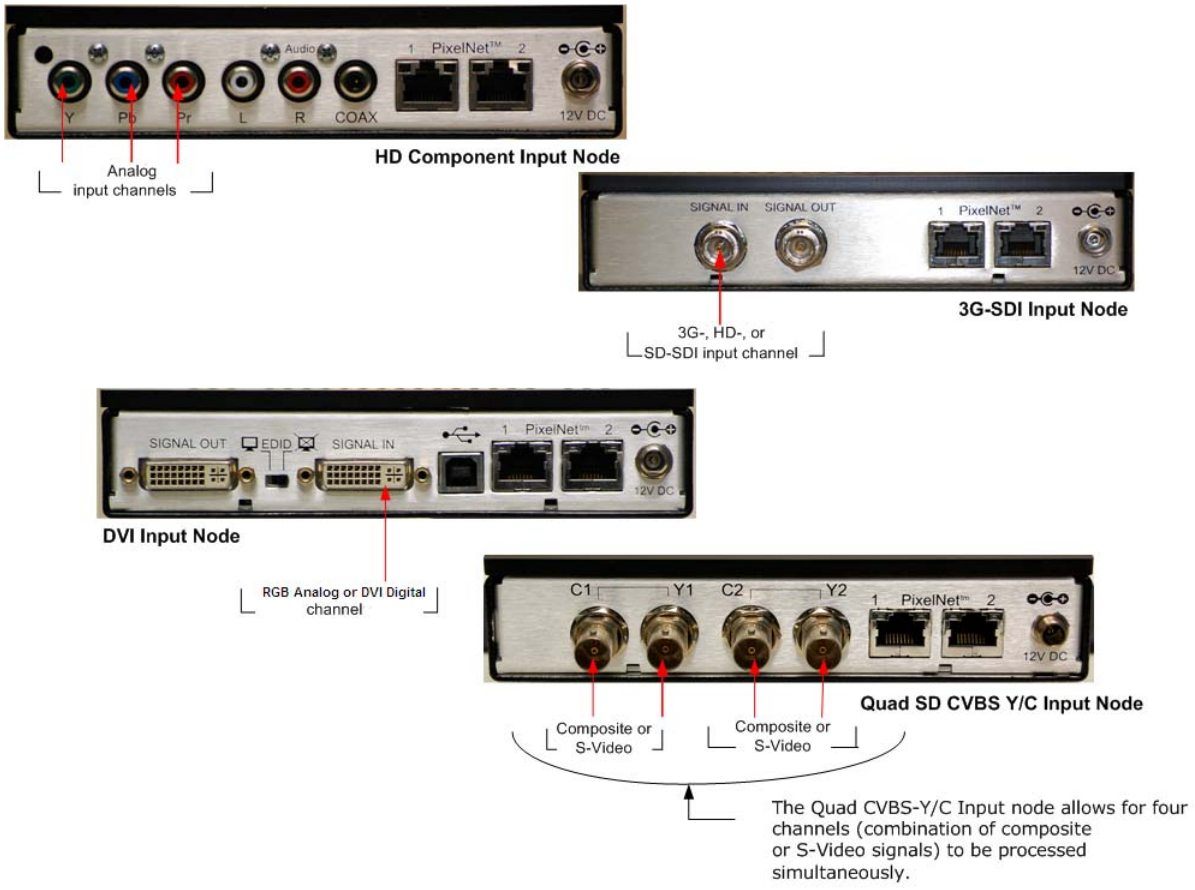


Figure 80 - Channel Overview of Input Nodes

5.4.1 Single Source

With a **Single Source**, PDC receives one or two streams from one channel (up to four channels in the case of a Quad CVBS Y/C node) from a single source to be rendered in a window.

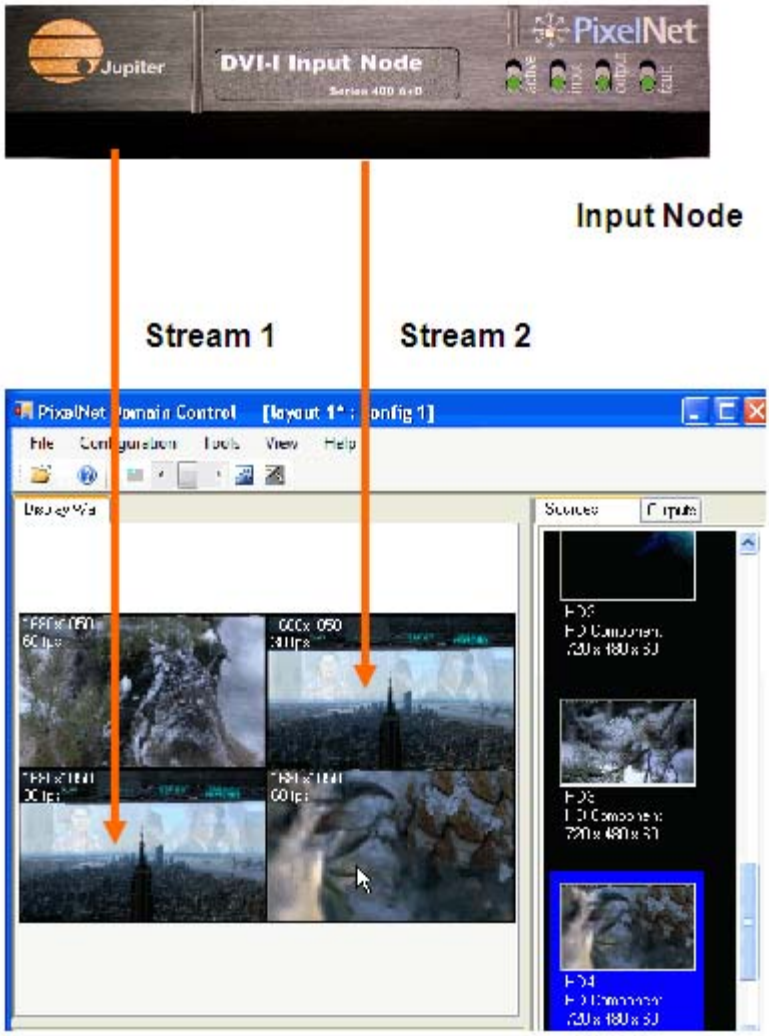


Figure 81 - Single Source

5.4.2 Ganged Source

A **Ganged Source** uses two or more streams where each stream carries a proportion of the same input source from different input nodes. Since the same input source is gradationally delivered by different nodes, the display will be rendered faster and encounter less congestion.

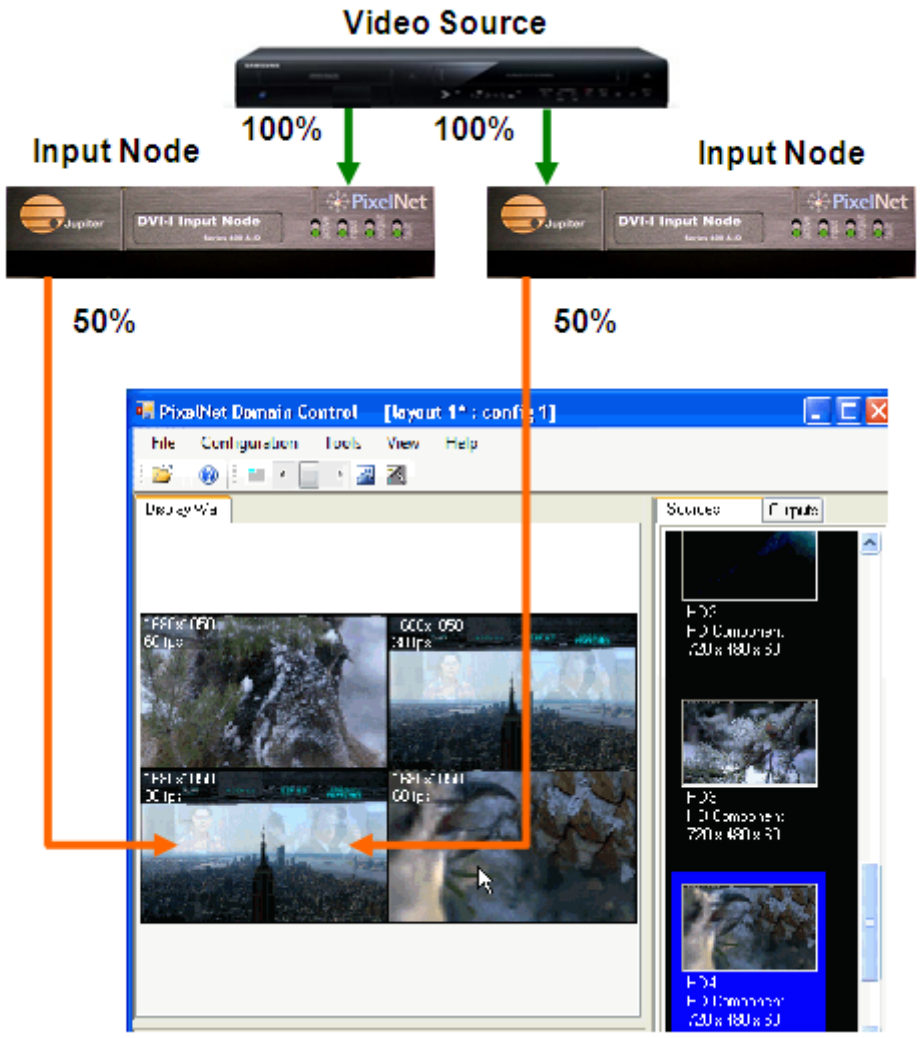


Figure 82 - Ganged Source

5.4.3 Grouped Source

A **Grouped Source** uses two or more streams where each stream carries a unique source rendered in its entirety while occupying a rectangular, non-overlapping portion of a window.

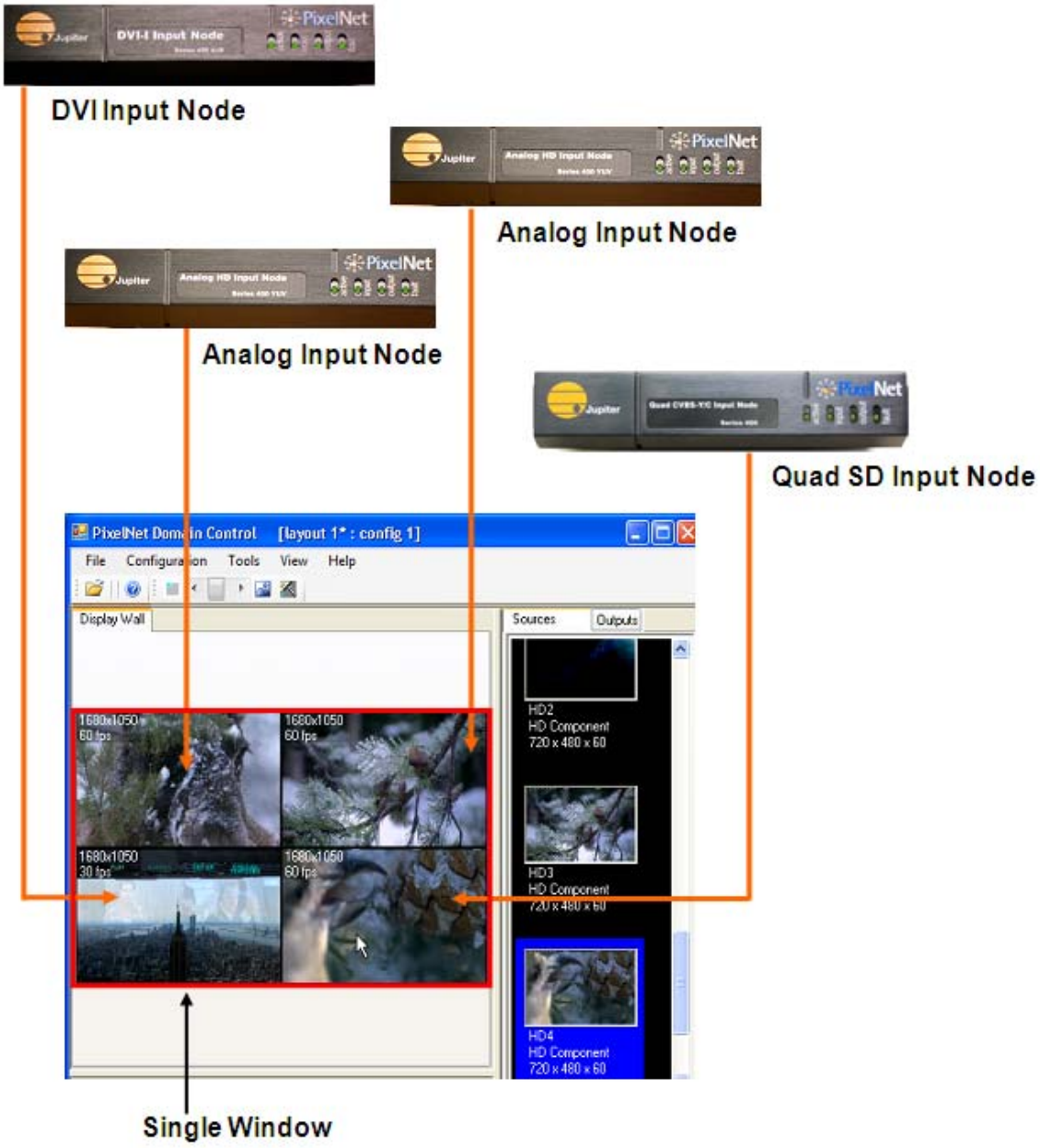


Figure 83 - Grouped Source

Grouped sources will appear glued together side-by-side (when tiled horizontally) or top-to-bottom (when tiled vertically) on the display wall. The grouped sources move as one image when moved around by the mouse clicker and rearranged on the wall. A particular use of grouping sources can be—taking a computer output spread over two or more screens and displaying it together on the display wall as one group.

5.4.4 Cloned Source

A Source is cloned when two or more Channels connected to the same source are consolidated for convenient access. A **Cloned Source** can contain (i.e. can fold under or collapse) a maximum of two streams each from three different input sources under one icon, provided that each stream carries the same proportion of the same input source.

The **Sources** tab on the **PDC** will show the number of cloned sources with a number highlighted on the upper right corner of the thumbnail icon.

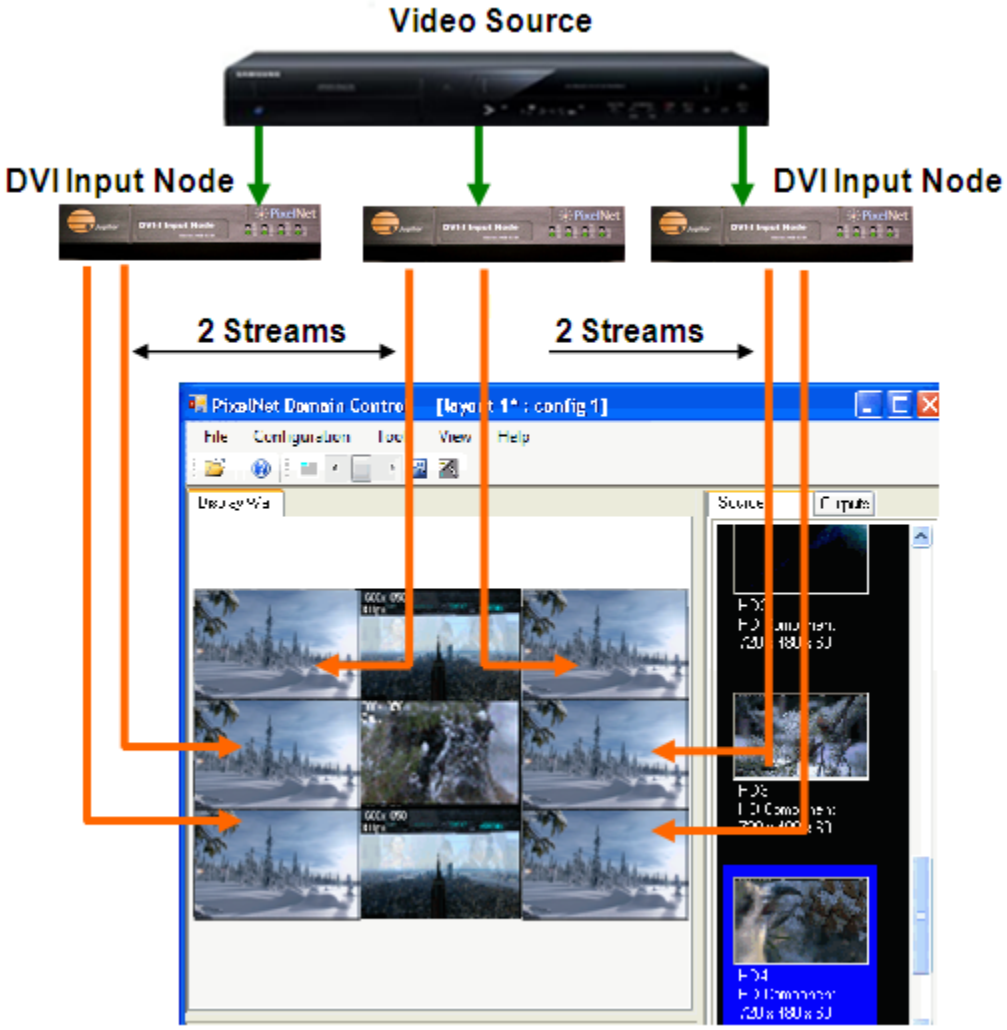
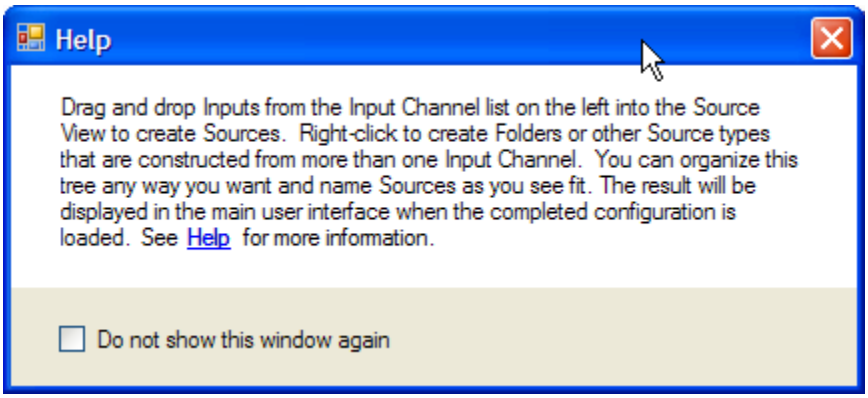


Figure 84 - Cloned Source

Cloning sources better organizes the Sources list when multiple streams of the same source are open. With cloned sources, the Sources list does not scroll forever; distinguishing different sources is also easier this way.

5.5 Source Configuration Tab

Accessing the **Source Configuration** page prompts this message:


Help
Drag and drop Inputs from the Input Channel list on the left into the Source View to create Sources. Right-click to create Folders or other Source types that are constructed from more than one Input Channel. You can organize this tree any way you want and name Sources as you see fit. The result will be displayed in the main user interface when the completed configuration is loaded. See Help for more information.
Do not show this window again

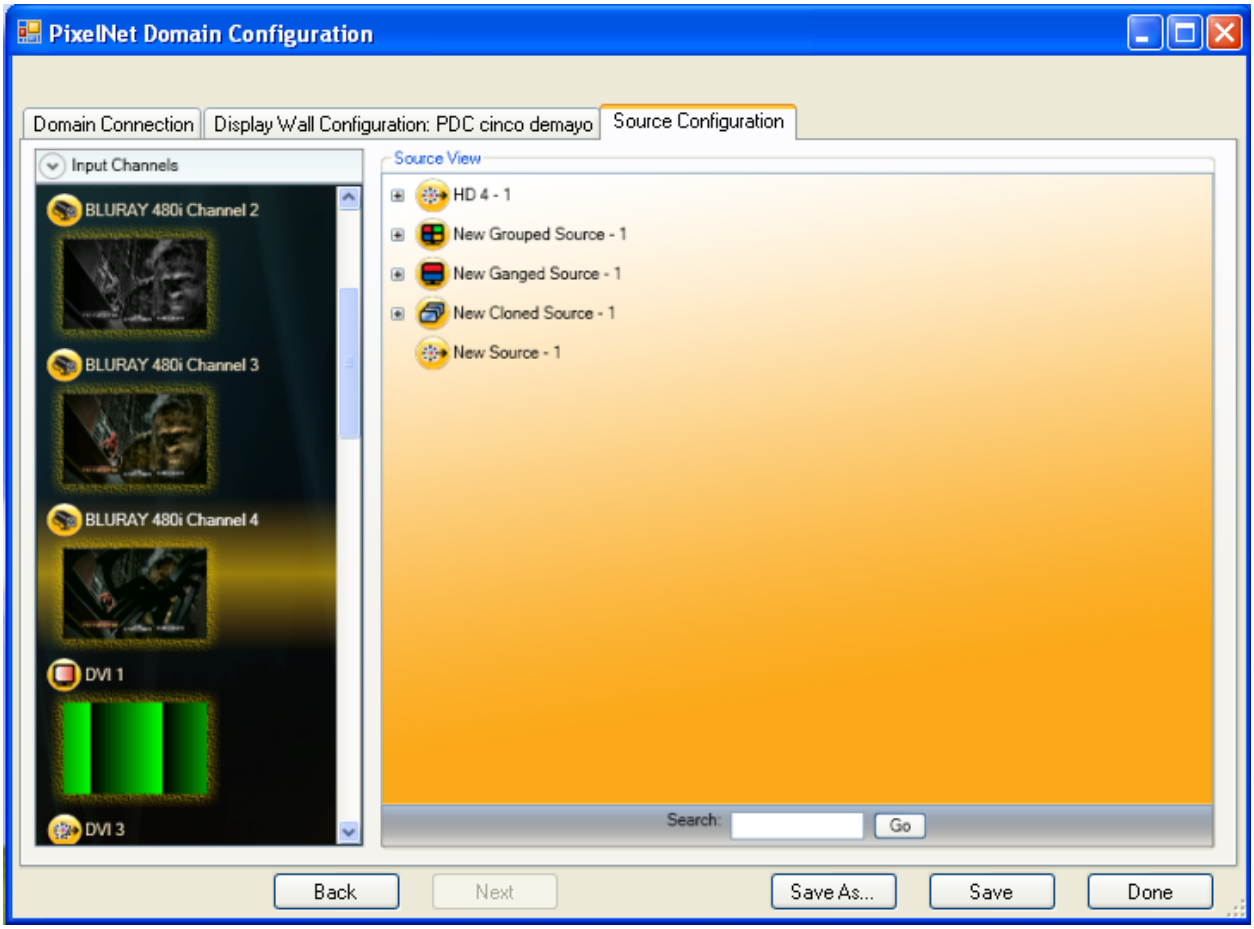


Figure 85 - Source Configuration Tab

Source Configuration Tab

The Source Configuration user interface is divided into two major sections:

- Input Channels (from PixelNet nodes)
- Source View (created by users)

The **Source Configuration** tab of the **PixelNet Domain Configuration** dialog defines how to view and access Sources present in a PixelNet System. This action can be as simple as selecting all Channels and creating Sources with default names or creating custom combinations of Channels and Sources displayed in multiple levels of hierarchy.

Note Right clicking in the **Source** column creates a Source without an associated Channel. It is also possible to create folders that contain Sources.

Dragging and dropping a Channel onto an existing Source will re-assign the Source to that Channel.

5.5.1 Input Channels

The Input Channels section displays all the discovered input channels. Selecting channels highlights the associated Source in **Source View**. Naming is prefixed by the node type: DVI, HD, HDSDI, QSD, etc.

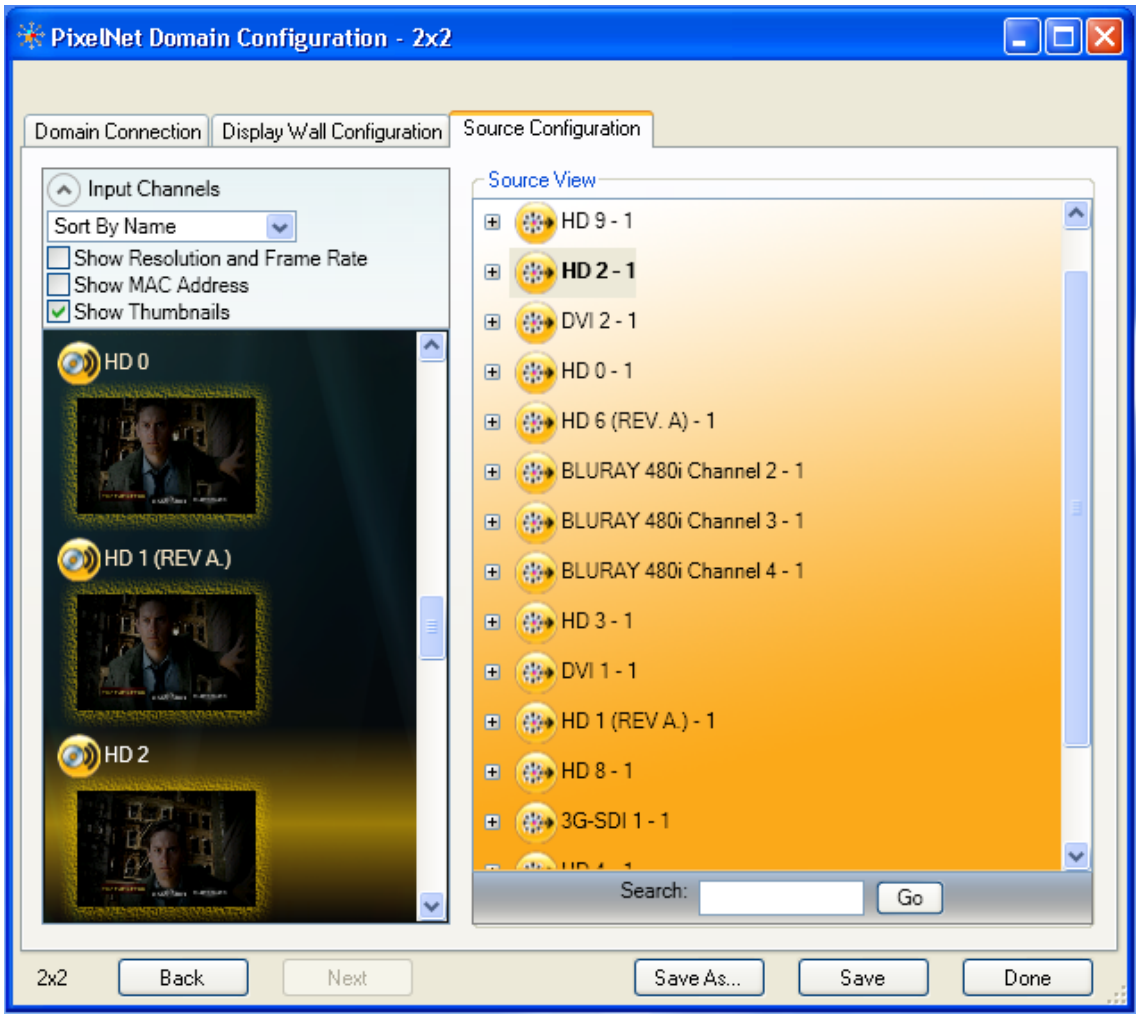


Figure 86 - Input Channels—Sorting Options

5.5.1.1 Display Options

Sorting Options

The Input Channels list can be sorted and viewed in two different perspectives. Click the **Input Channels** down arrow for a list of sorting options in the drop-down menu:

- Sort By name
- Sort By MAC Address

Note Check box options are not part of the drop-down menu; however, they can be accessed by clicking the down arrow next to the Input Channels title.

Check Box Options

In addition to the sorting options, choose from three check box options where each option displays one or more unique attributes regarding the channels.

- Show Resolution and Frame Rate
- Show MAC Address
- Show Thumbnails

Select the check box options by clicking the checkbox next to each option.

5.5.2 Source View Right-Click Context Menu

The Right-click Context Menu within Source View allows the following actions:

- New —>Folder...

  The name of this Folder, Group, Gang, or Clone will be set to a default, unique value, pre-highlighted in the interface to be changed to something more significant. Un-named entities are not allowed.

- Copy
- Paste (if copy/cut buffer is available)
- Duplicate (if source is selected)
- Cut
- Properties (if source is selected)

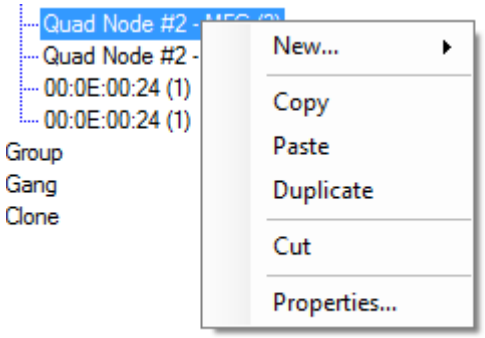


Figure 87 - Source View Right-Click Menu

Dragging and dropping a Channel onto a Source creates the link from node to Source. If the Source is already assigned to a node or nodes, PDC will ask for confirmation.

5.5.2.1 Right-Click Context Menu for Folder

The right-click context menu for a Folder within the Source View panel will allow the user to perform the following actions on a Folder:

- Delete

  If there are sources in the Folder a message will prompt for confirmation before deleting all contents.

- Cut
- Copy
- Rename
- Properties

It should be possible to view all folder properties from its dialog, be able to rename the folder, and to assign a custom icon to the Folder, to be used in the Source View.

5.5.2.2 Right-Click Context Menu for Source

The right-click context menu for a Source within the Source View will allow the user to perform the following actions:

- Delete
- Cut
- Copy
- Duplicate
- Properties

The properties dialog for a Source includes the name of the source, associated node or nodes, and specific formatting (e.g. hue, contrast, saturation, cropping/zooming) to be applied to that Source's window. A drop-down list of the nodes available for association. Selecting a new node will override the association already in place and reset other formatting parameters to their default values.

Keyboard shortcuts: *Ctrl-C, Ctrl-V, DEL, Ctrl-X* with a Source selected in the Source View should perform the expected action.

5.5.3 Channel Combinations

Sources can be created so that they have special properties based on the inter-relationship with one or more Channels. Create specific Source types using the right-click context menu. Once the Source is created, drag and drop associated Channels to the source to create the relationship.

Channels placed into combination Sources do not require their nodes to be exclusively part of the grouping. Component parts can exist as separate singular Sources, or as part of other groups. Stream count, however, will be the lowest common denominator of the nodes across all instances of the Channel.

5.5.3.1 Creating a Grouped Source

To create a Group:

1. Right-click on the **Source View** section and select New Grouped Source (**Source View—>New—>Grouped Source**). Drop two or more nodes under the New Grouped Source (#) folder. This allows multiple channels to be treated as having a fixed geometric relationship to one another on a display wall, contained by a source window.

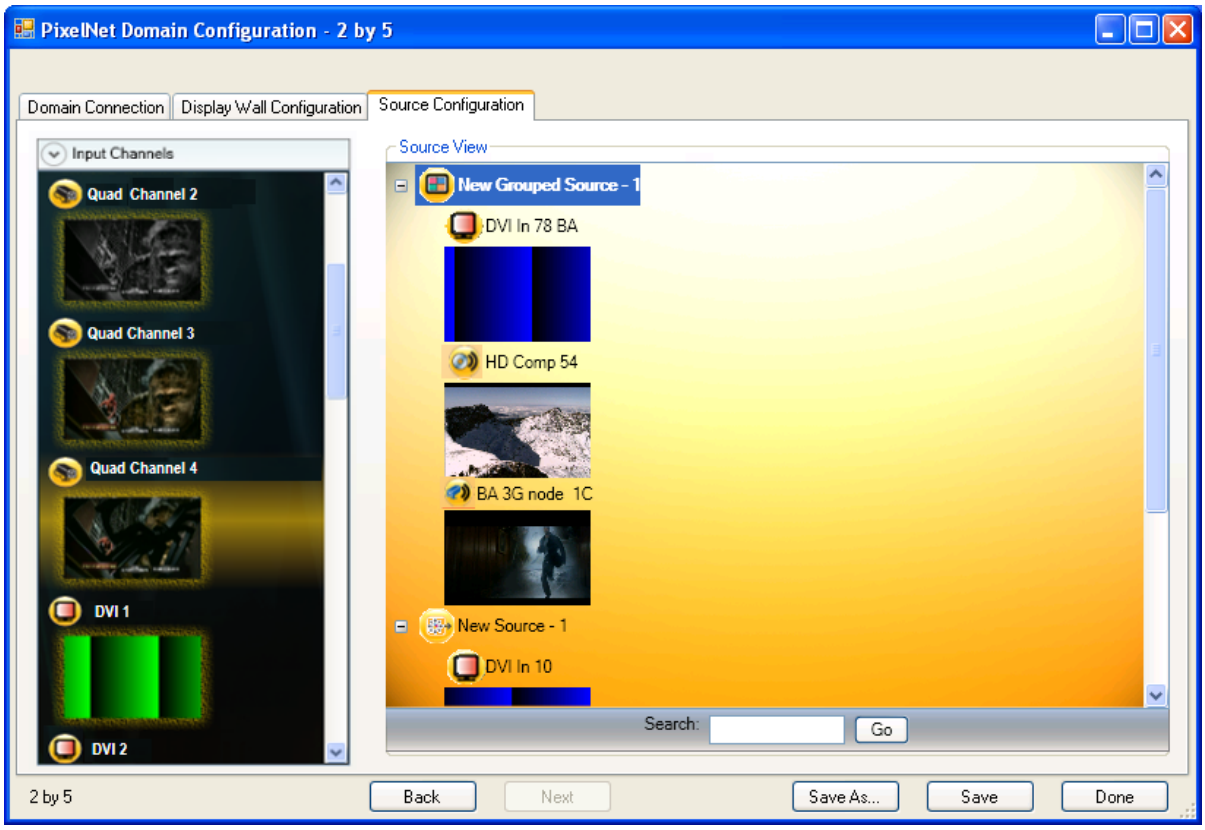


Figure 88 - Creating a Group Source

2. Right-click on the Grouped Source folder to bring up the **Source Properties** dialog shown in **"Figure 89" on page 110**.
3. Enter an appropriate name for the Grouped Source in the **Source Info** section. Include the node and source type within the **Source Name** to easily identify the Grouped Source in the

Source View section. The **Source Type** will be classified based on the kind of source created.

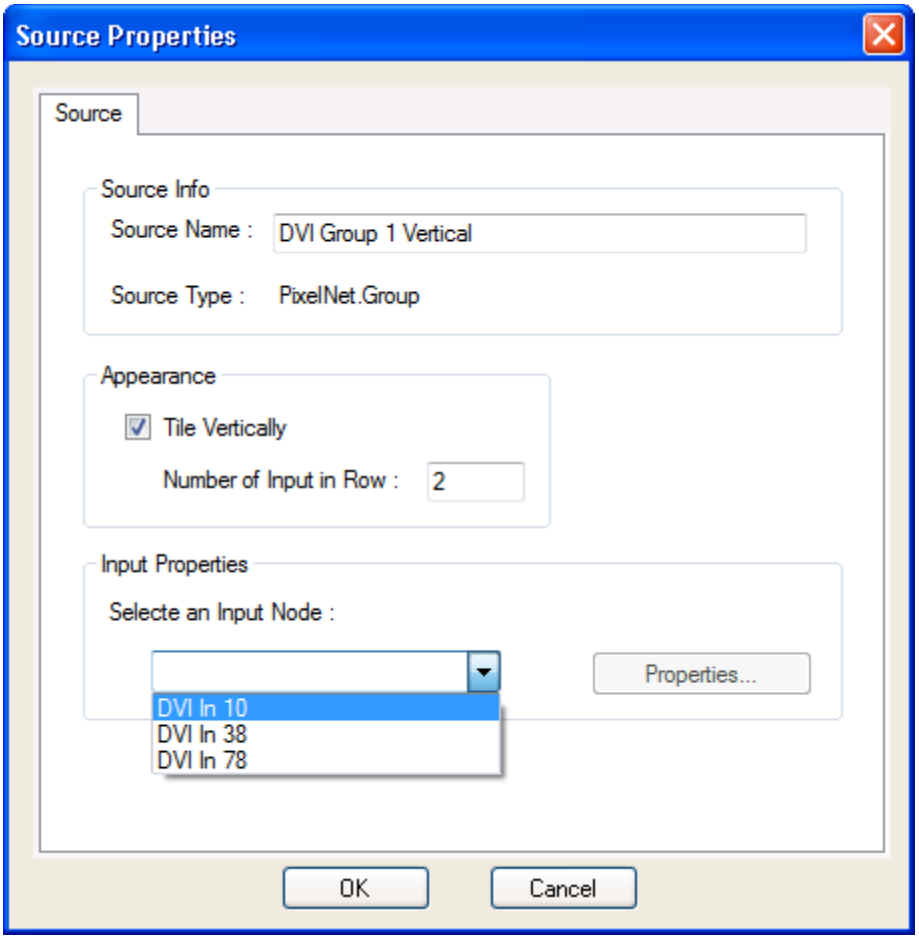
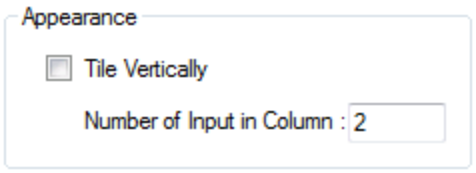


Figure 89 - Grouped Source Properties

4. The **Appearance** section allows to arrange the Grouped source display on the display wall. The arrangement can either be vertical (in number of rows) or horizontal (in number of columns).
    - To display the Group vertically on the display wall, click the **Tile Vertically** check box. This will change the text beneath the check box to—**Number of Input in Row**; enter the number of channels in the Group in this field.

- To display the Group horizontally, leave the **Tile Vertically** check box unchecked. The text beneath the check box will read—**Number of Input in Column**; enter the number of channels in the Group in this field.



5. The **Input Properties** section allows for selecting and viewing the individual node properties within the Grouped Source. Select the desired node from the drop-down menu list and click the **Properties** button. The **Source Properties** dialog expands to show more tabs (the number and type of tabs that appear depend on the individual nodes in the Grouped Source).
6. Make the desired adjustments to the image display in the **Source Properties** dialog. For a more detailed explanation of the **Source Properties** dialog, refer to **"Source Properties" on page 118**.

5.5.3.2 Creating a Ganged Source

To create a Gang:

1. Right-click on the **Source View** section and select a New Ganged Source (**Source View—>New—>Ganged Source**).
2. Move two or more channels with the same input source into the New Ganged Source (#) folder. This aggregates the Channels to create greater than 2 Gbps effective bandwidth by dividing the signal among the multiple input Channels.

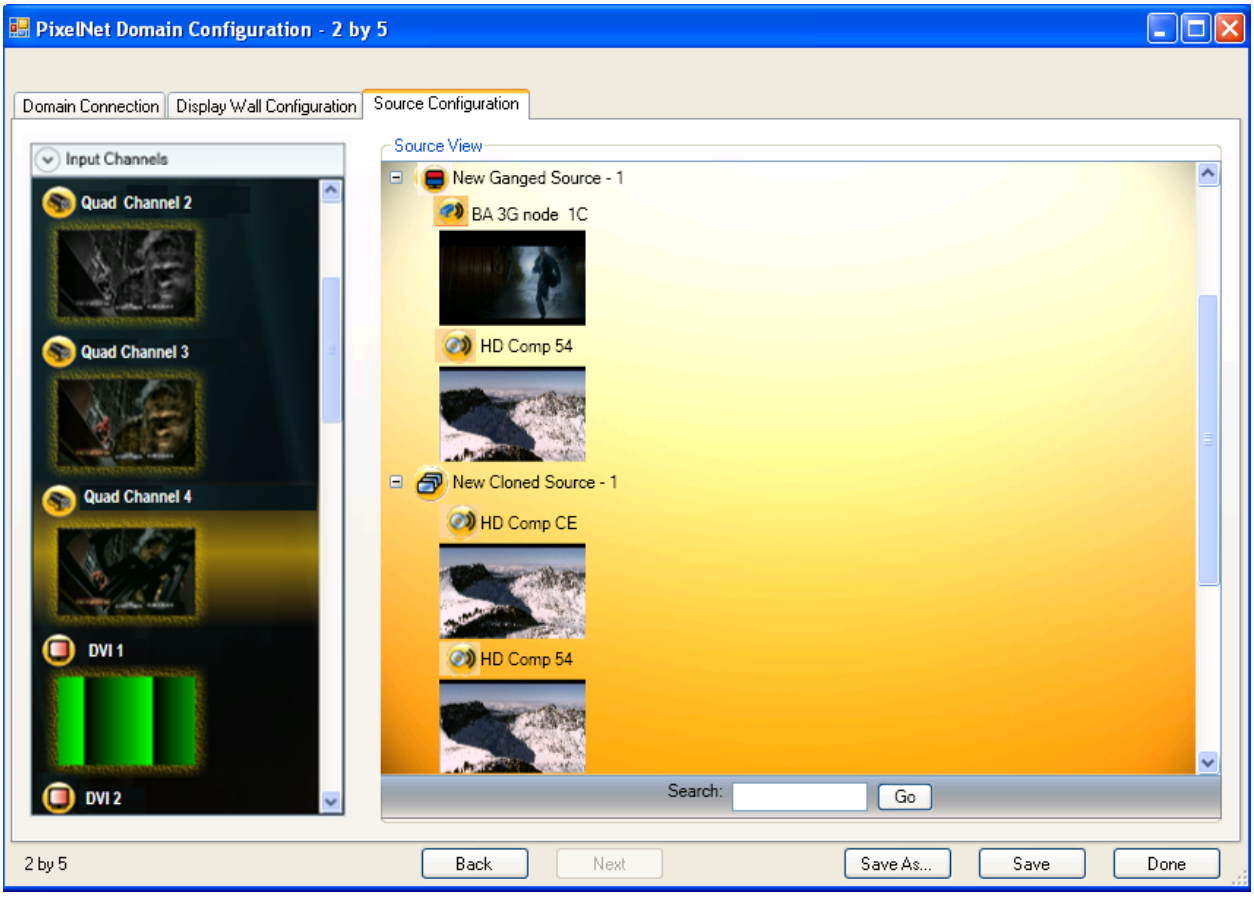


Figure 90 - Ganged & Cloned Sources

3. Right-click on the Ganged Source folder to bring up the **Source Properties** dialog shown in **"Figure 91" on page 113**.

   Enter an appropriate name for the Ganged Source in the **Source Info** section. Including the node and source type within the **Source Name** will make it easier to identify the Ganged Source

in the **Source View** section. The **Source Type** will be classified based on the kind of Source created. In Quad SD Ganged Sources, the **Channel** number will also be given.

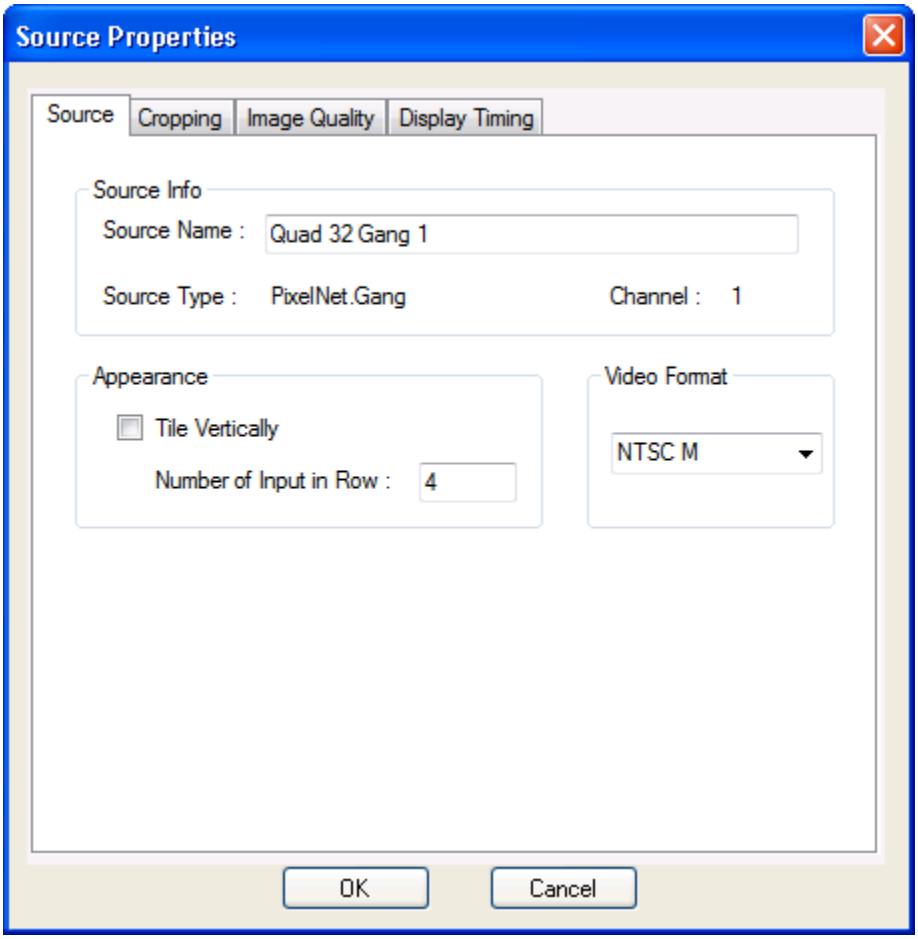
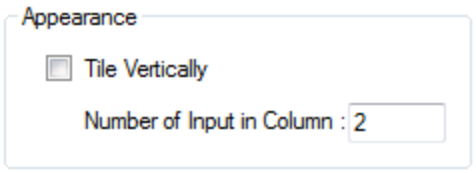


Figure 91 - Ganged Source Properties

4. The **Appearance** section allows to arrange the Ganged source display on the display wall. The arrangement can either be vertical (in number of rows) or horizontal (in number of columns).
    - To display the Gang vertically on the display wall, click the **Tile Vertically** check box. This will change the text beneath the check box to—**Number of Input in Row**; enter the number of channels in the Gang in this field.

- To display the Gang horizontally, leave the **Tile Vertically** check box unchecked. The text beneath the check box will read—**Number of Input in Column**; enter the number of channels in the Gang in this field.



The **Video Format** section is unique to Quad SD Sources. Specify the video format by using the drop-down menu.

Note The main purpose of creating a Ganged Source is to expedite the time taken for displaying the source. 3G-SDI nodes will perform fastest in this regard, whereas, Quad SD nodes (with four channels to process) will be the slowest in a Ganged Source.

Refer to **"Ganged Source " on page 97** for more information.

5.5.3.3 Creating a Cloned Source

To create a Clone:

1. Right-click on the **Source View** section and select a New Cloned Source (**Source View—>New—>Cloned Source**).
2. Place two or more of the same type of Channels into the New Cloned Source (#) folder.
3. Right-click on the Cloned Source folder to bring up the **Source Properties** dialog shown in **"Figure 92" on page 115**.

   Enter an appropriate name for the Cloned Source in the **Source Info** section. Including the node and source type within the **Source Name** will make it easier to identify the Cloned Source in the **Source View** section. The **Source Type** will be classified based on the kind of Source created.

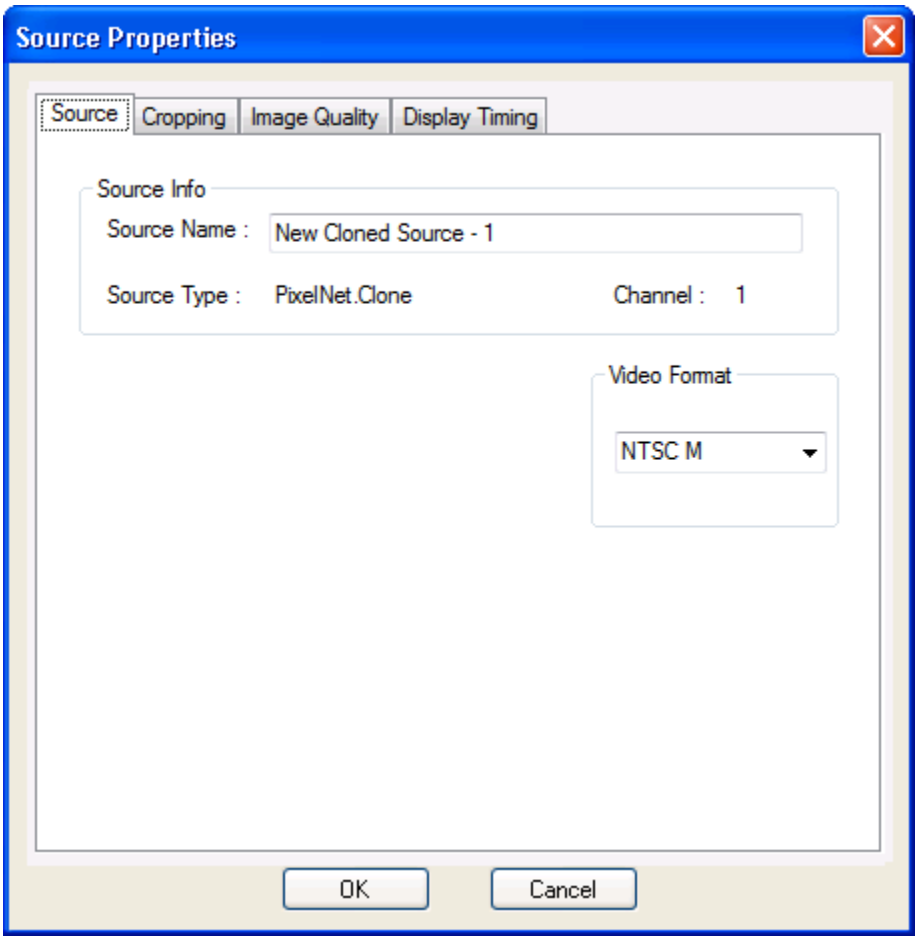


Figure 92 - Cloned Source Properties

In Quad SD Cloned Sources, the **Channel** number will also be given.

The **Video Format** section is unique to Quad SD Sources. Specify the video format by using the drop-down menu.

Refer to **"Cloned Source " on page 100** for more information.

Source Configuration Tab Button

- (Search) **Go**: searches the panel to match the Search term and highlights it in bold. If there is more than one instance of the search term (for example, **New** is shown in three different names in the following figure) pressing **Go** will highlight each instance in succession.

Note The (Search) **Go** button is specific to the **Source View** section. The **Input Channels** section is not included in the search.

5.5.4 Icons

Once there is a single channel (or more, in the case of aggregates like Group, Gang, or Clone) the icon of the source will change to match the corresponding channel icon (for single) or one of the aggregate icons. When there are no channels in a particular source, the icon will be generic.

For instance, a generic icon showing up in the main interface indicates the presence of an unconfigured source in the tree. Until the source is configured, the generic icon will remain next to it as a reminder of its unconfigured status.

Once a channel is dropped into a source, that source has a valid definition, hence the icon will change to match either the aggregate or the channel icon.

The channel and source icons are classified in the following table:

Table 3: Channel and Source Icons

Icon	Description
	DVI Channel
	HD Channel
	3G Channel
	Quad SD Channel
	Single Source
	Ganged Source
	Grouped Source
	Cloned Source

5.5.5 Source Properties

Right-clicking on a specific input channel opens a properties dialog, providing access to change associated with node name as well as source configurations/adjustments.

5.5.5.1 Input Source Right-click Menu

The Properties dialog can be accessed from the right-click menu:

- **Properties—**This menu item launches the **Source Properties** dialog.

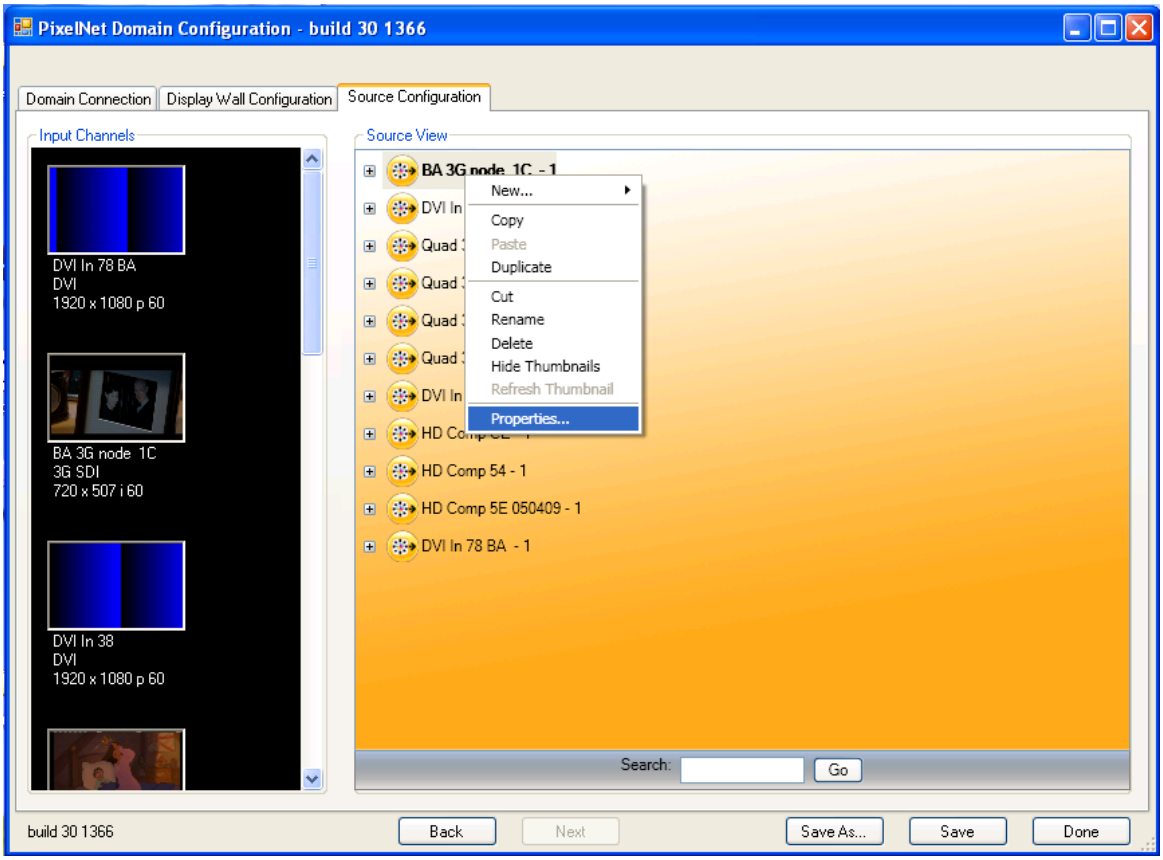


Figure 93 - Input Source Right-click Menu

5.5.5.2 Source Properties—Source Tab

Double-click on an input source or click on Properties from the Input Source Right-click menu. The following dialog appears:

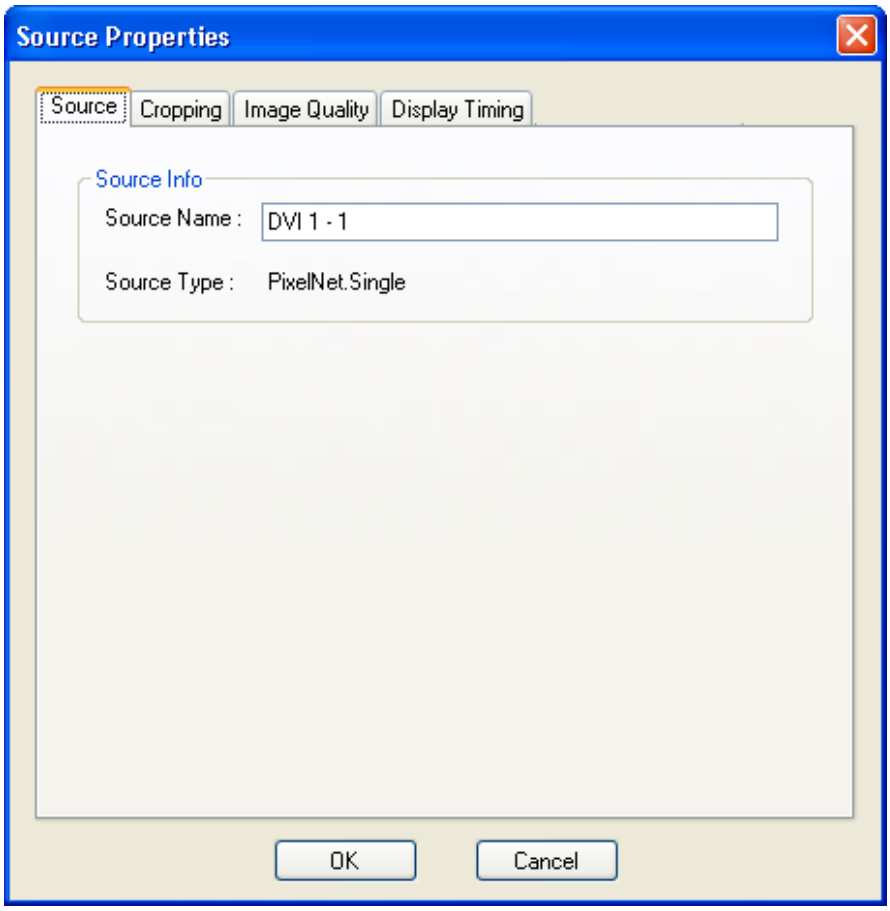
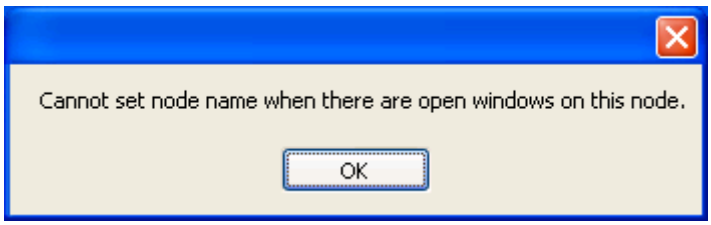


Figure 94 - Input Source Settings

The name/MAC address of the selected input source appears in the **Name** field. As shipped from the factory, the name field is left blank.The type of Source is also classified below the Name field.

When attempting to change the **Input Source Name** without closing the open windows for this node, the following error message will appear:



In order to change the Input Source Name:

1. Click **OK** on the above message.
2. Close all of the open windows related to the source on the display wall.
3. Enter the new name in the **Name** field.

Note Jupiter strongly recommends naming the source and keeping a record of all the source names at an accessible place for immediate reference. Since configurations and layouts refer to sources by node names, naming the nodes makes replacing nodes or any future changes to the nodes easier to administer.

4. Click **OK** to register the changes.

5.5.5.3 Formatting Quad SD

Video Format

The **Video Format** section is unique to the Quad SD input node. Designate the appropriate video format from the drop-down menu in this field.

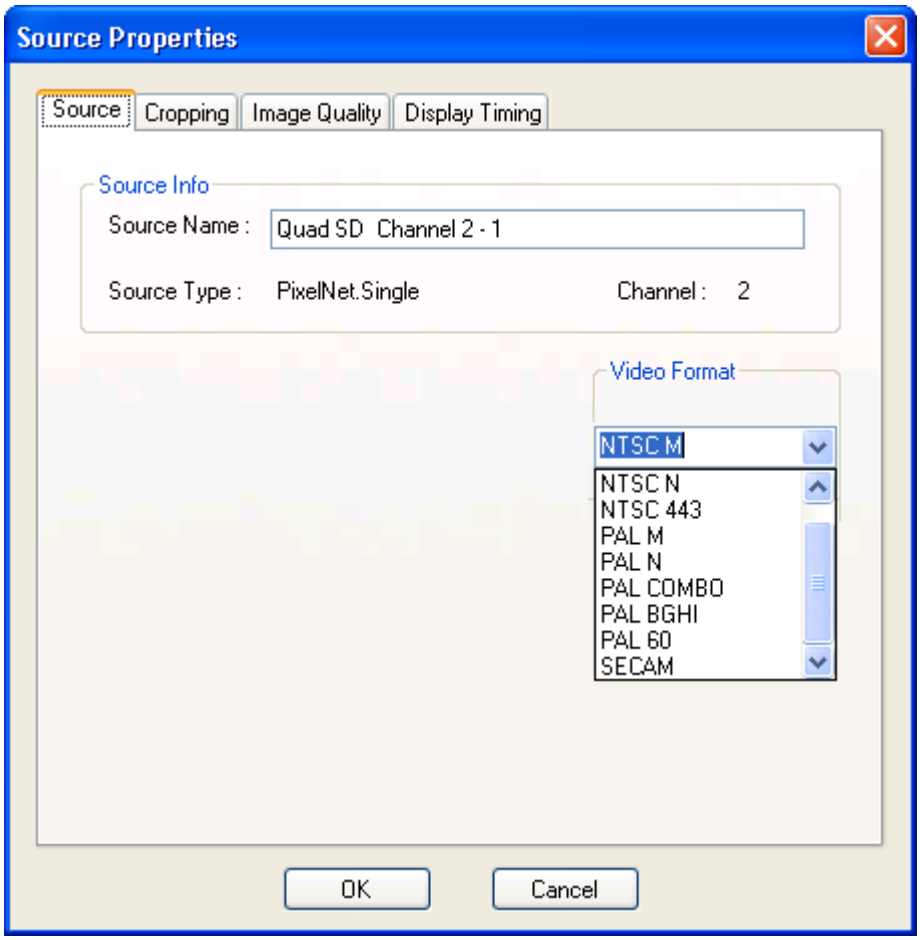


Figure 95 - Source Properties—Source Tab

5.5.5.4 1920x1080 Horizontal Width

Only HD Component or 3G-SDI input nodes contain the **1920x1080 Horizontal Width** section. By default, the **1920 (16:9)** mode is selected. However, to enable a higher frame rate choose the **1440 (4:3)** option.

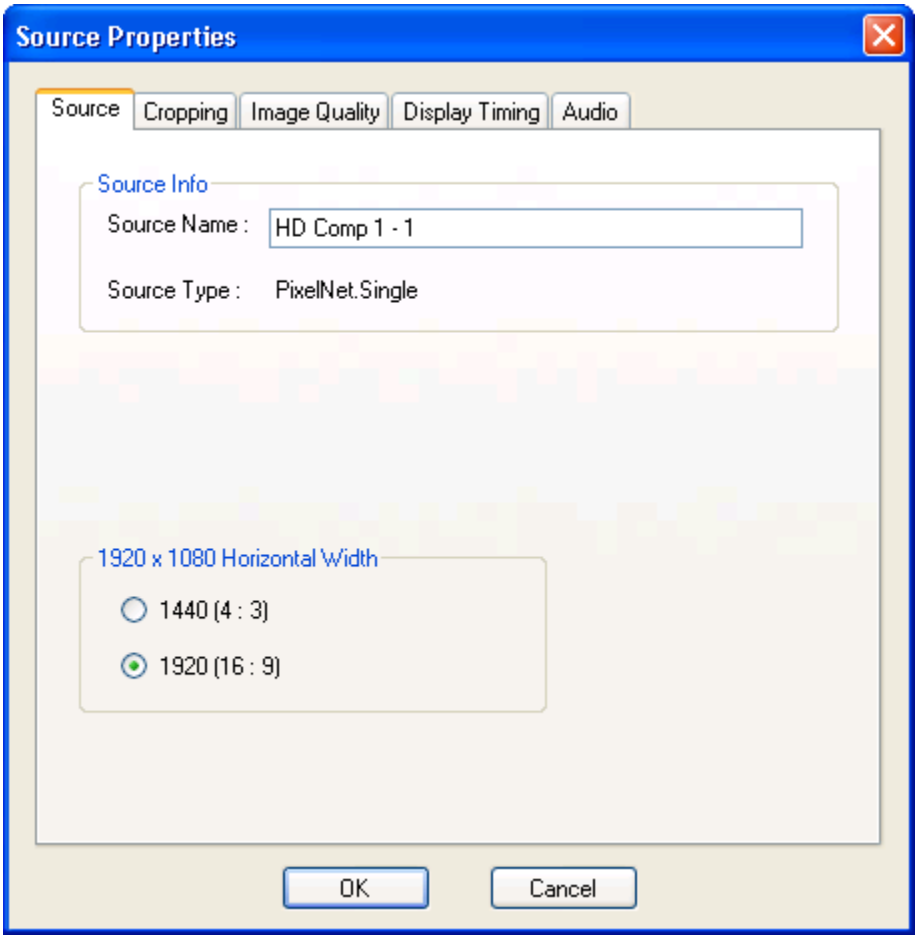


Figure 96 - HD & 3G-SDI—Source Tab

5.5.5.5 Source Properties—Cropping Tab

- **Cropping Tab—Cropping**: This section allows cropping the window on all four sides, by entering the values or using numeric up/down control.
- **Cropping Tab—Transparency:** The Transparency slider allows the cropped area to be viewed in varying degrees of transparency. Use the Transparency slider to adjust the image by gauging how much is being cropped from the original image.

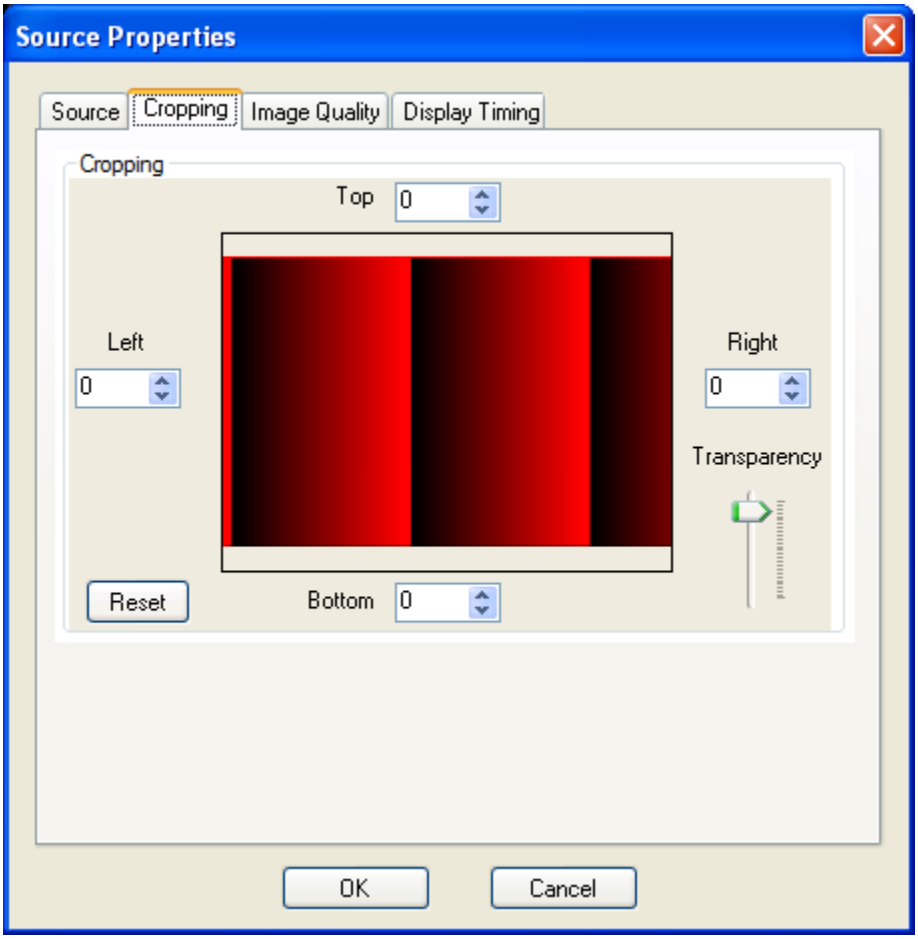


Figure 97 - Cropping Tab

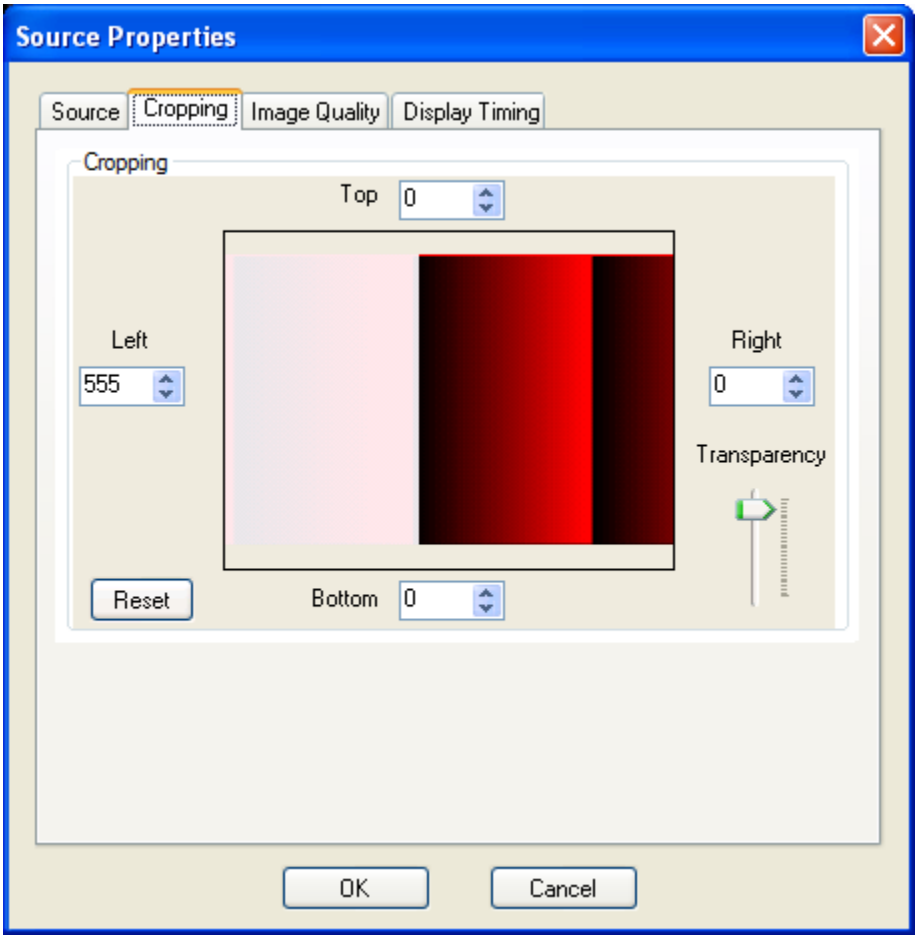


Figure 98 - Image after Cropping

5.5.5.6 Source Properties—Image Quality Tab

Selecting the **Image Quality** Properties tab displays the following dialog.

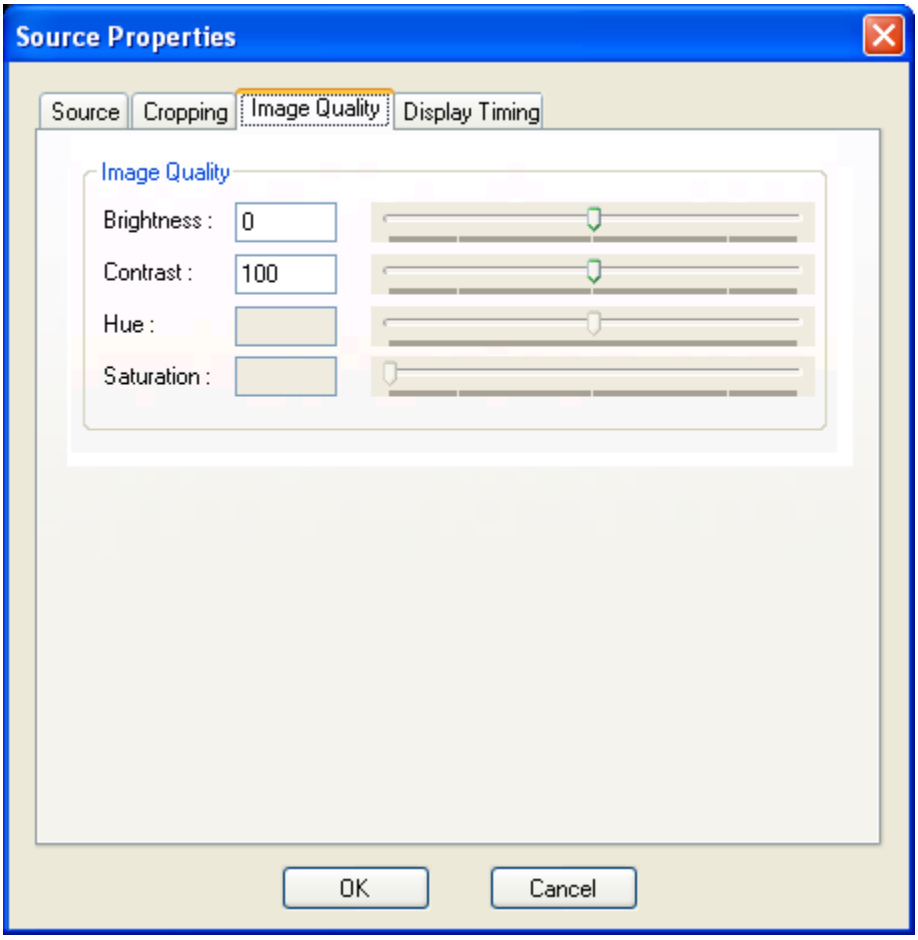


Figure 99 - Source Properties—Image Quality

Brightness

Set the desired image brightness by clicking on and selecting the Brightness slider control. Brightness can be set from –100 to +100%. Brightness changes the image from a very dark image on one end to a very bright on the other end.

Contrast

Set the desired image Contrast by clicking on and selecting the Contrast slider control. Contrast can be set from 0 to 200%.

Hue
Set the desired image hue by clicking on and selecting the Hue slider control. Hue can be set from –180 to +180 degrees. Hue changes the color balance of the image from green on one end to purple on the other end. Hue is not supported under the PAL format, and is not available as an option for RGB windows.

Saturation
Set the desired image saturation by clicking on and selecting the Saturation slider control. Saturation can be set from 0 to 200. Saturation changes the image from no color (black and white) to very saturated colors. Saturation is not available as an option for RGB windows.

5.5.5.7 Source Properties—Display Timing

Selecting the **Display Timing** tab, opens up the following screen:

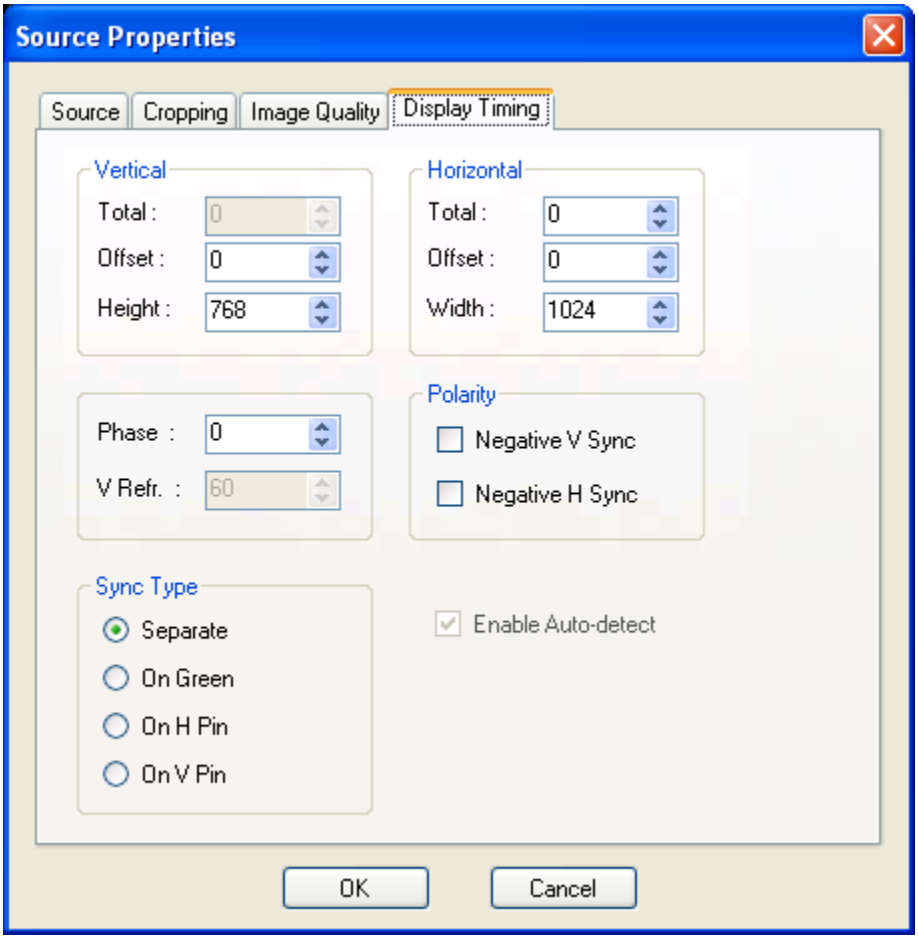


Figure 100 - Source Properties—Display Timing Tab

Vertical – Total
The Vertical Total parameter adjusts the total vertical timing. Vertical Total includes both the visible pixels and the retrace (or blanking) time.

Vertical – Offset
Vertical Offset has a range of from 1 to 200 and has the effect of positioning the screen image vertically within the display. This control allows to move the image up and down within the display.

Vertical – Height
The Height parameter adjusts the displayed number of lines. The Height parameter usually will not need to be adjusted, except for an unusual signal. In most cases, blank lines will appear.

Horizontal – Total
The Horizontal Total parameter adjusts the total number of pixels in a line. Horizontal Total includes both the visible pixels and the retrace (or blanking) time.

Horizontal – Offset
Horizontal Offset has the effect of positioning the screen image horizontally within the display. This control allows moving the image back and forth sideways within the display.

Horizontal – Width
The Width parameter adjusts the displayed number of pixels. The Width parameter usually will not need to be adjusted. In most cases, blank pixels will display in the blanking or sync area of the signal.

Phase
Phase adjusts the sample time on the pixel clock.

Vertical Refresh sets the scan rate. This setting has a range of 0 to 60 Hz. Usually there is no need to set this, as it is set from the input signal.

Polarity
The **Negative VSync Polarity** (vertical sync) check box sets the polarity of the vertical sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

The **Negative HSync Polarity** (horizontal sync) check box sets the polarity of the horizontal sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

Sync Type

Sync Type shows the type of sync pulse detected. Sync types are shown below:

1. On H pin - Sync on Horizontal pin
2. On Green - Sync on Green
3. Separate - Horizontal on H pin, Vertical on V pin
4. On V Pin - Sync on Vertical pin

The table below shows the connector pin to find the sync signal for the various sync types shown.

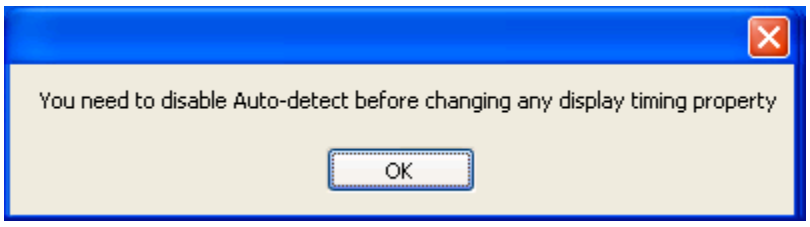
Table 4: Sync Type

	Separate	On Green	On H	On V
H Sync	**H pin**	**G pin**	**H pin**	**V pin**
V Sync	**V Pin**	**G pin**	**H pin**	**V Pin**

Enable Auto-Detect

This option automatically detects the timing and causes an auto refresh of the node when enabled.

Attempting to modify **Display Timing** properties when auto-detect is enabled will prompt the following message:



Buttons

- **OK**—Click this to load changes to Name, Comments, and properties into the node.
- **Cancel**—Click this to cancel changes to Name, Comments, and properties into the node.

5.5.5.8 Source Properties—Image Enhancement

The **Image Enhancement** tab appears only in sources with audio-capable nodes (i.e. HD Component and 3G-SDI nodes).

The **Image Enhancement** tab provides additional controls to further enhance the image at a more granular level than the controls available on the **Source Properties—Image Quality Tab**.

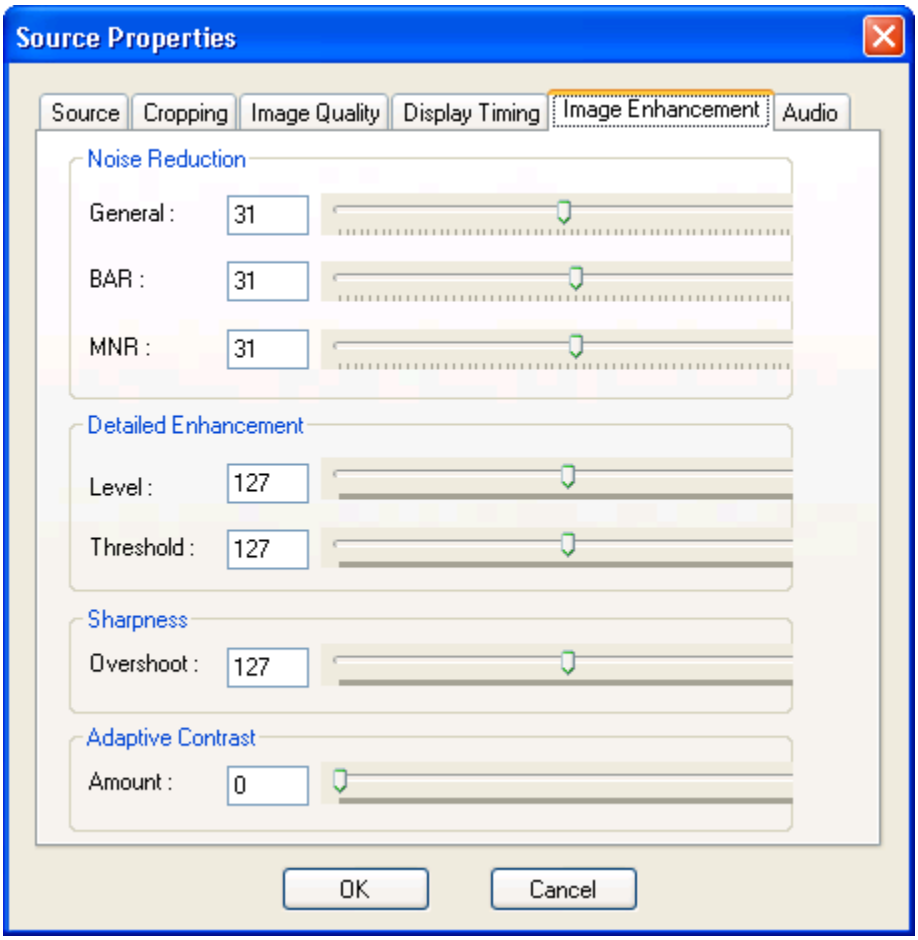


Figure 101 - Image Enhancement

Noise Reduction

- **General:** This is General Noise Reduction (GNR). Set the desired GNR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the General slider control.

- **BAR:** This is Block Artifact Reduction (BAR). Set the desired BAR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the BAR slider control.
- **MNR:** This is Mosquito Noise Reduction (MNR). Set the desired MNR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the MNR slider control.

Detail Enhancement:

- **Level:** This is Detail Enhancement Level. Set the desired enhancement level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Level slider control.
- **Threshold:** This is Detail Enhancement Noise Threshold. Set the desired noise threshold level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Threshold slider control.

Sharpness:

- **Overshoot:** This is Edge Sharpness Overshoot. Set the desired overshoot level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Sharpness slider control.

Adaptive Contrast:

- **Amount:** This is Adaptive Contrast Enhancement Level. Set the desired enhancement Level by manually entering a numerical value between 0 and 15 or by click-selecting the value using the Amount slider control.

5.5.5.9 Source Properties—Audio Tab

The **Audio** tab appears only in sources with audio-capable nodes (i.e. HD Component and 3G-SDI nodes).

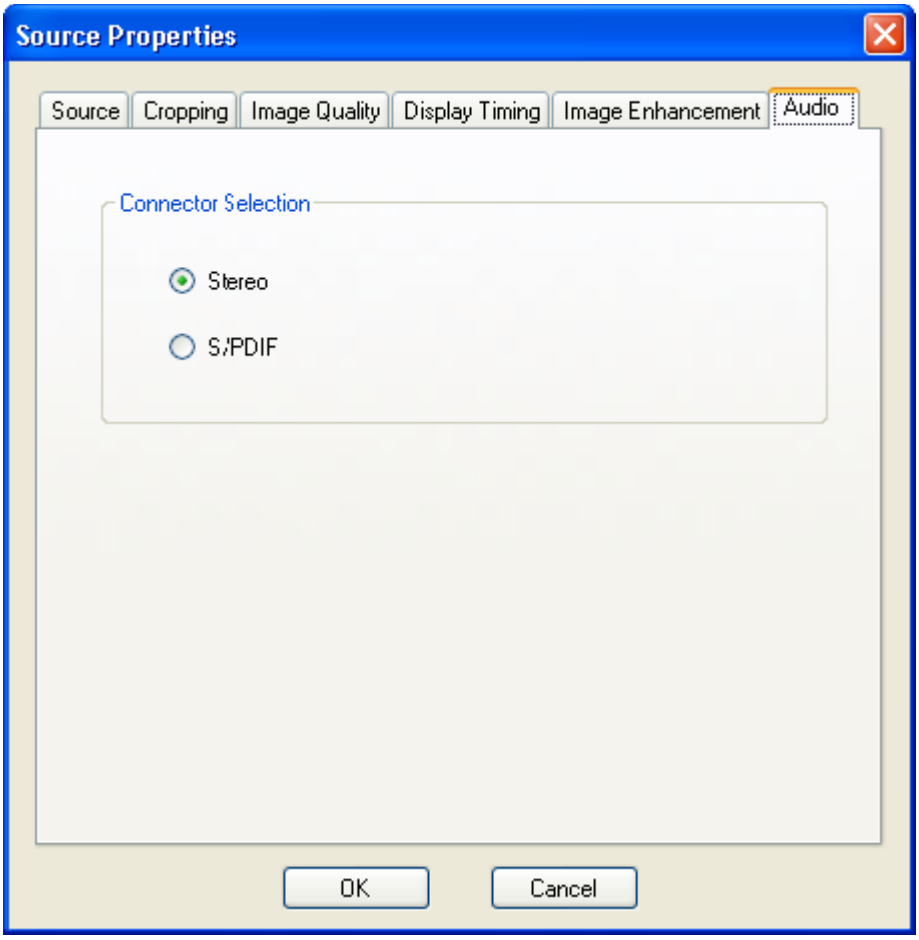


Figure 102 - Source Properties—Audio

- **Connector Selection**: This section offers two options for the type of audio connection:
  - **Stereo:** A standard stereo setup with left and right connectors
  - **S/PDIF:** A wired option with phono connectors used for termination. S/PDIF (for Sony/Philips digital interface) has a much better audio range than Stereo.

5.5.6 Input Channel Properties

When you right-click on an input channel, two menu items appear:

- **Properties—**This menu item launches the dialog, **"Input Channel Properties—Node Tab" on page 133**.
- **Refresh Thumbnail—**This menu item refreshes the thumbnail of the selected input node. Double-clicking the thumbnail will also refresh it.

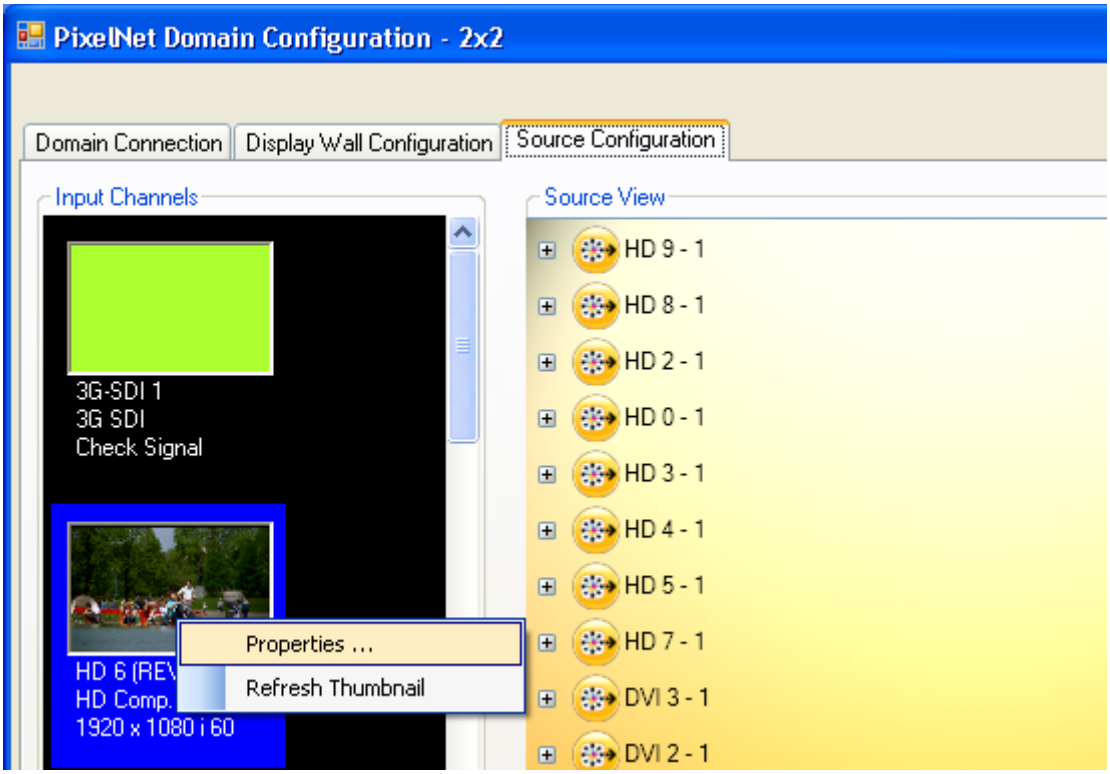


Figure 103 - Right-click Menu

5.5.6.1 Input Channel Properties—Node Tab

Double-click on an input node. The following dialog appears:

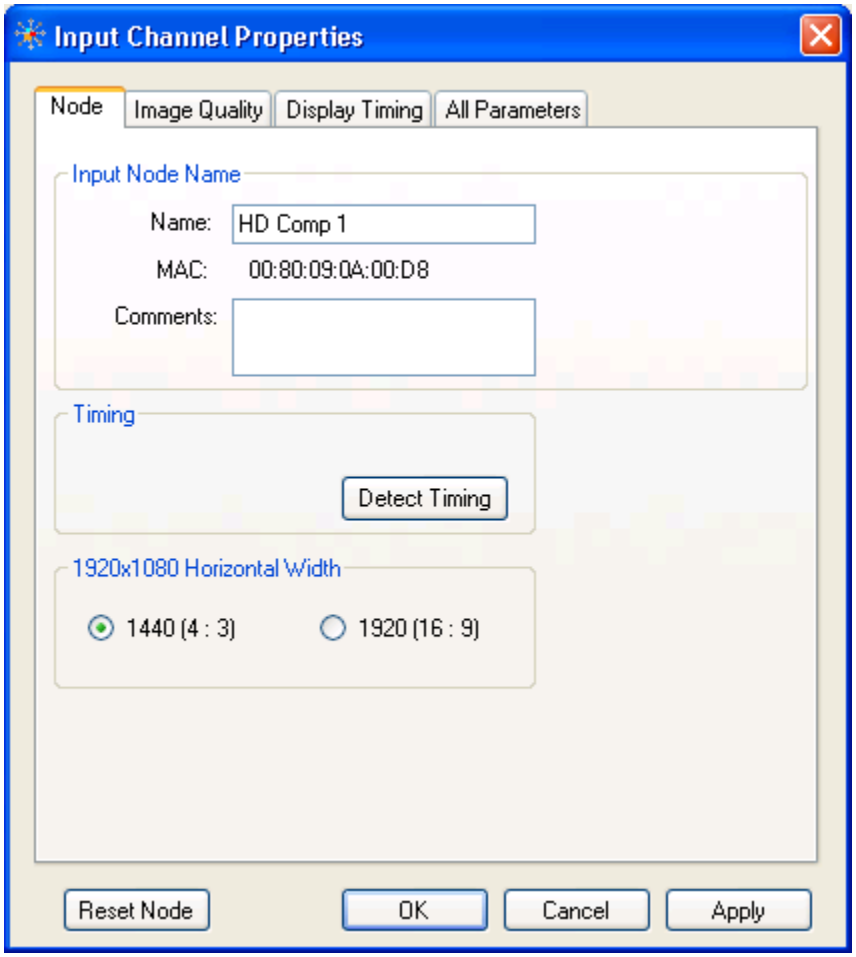
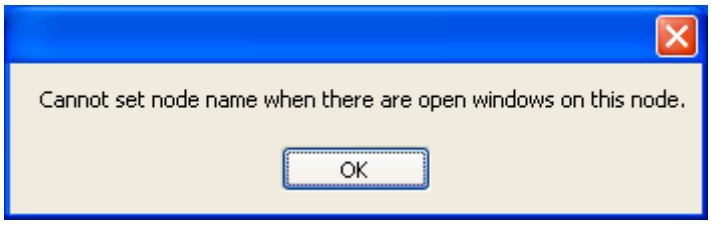


Figure 104 - Input Node Settings—HD Component

5.5.6.1.1 Input Node Name

The name of the selected input node appears in the **Name** field with its **MAC** address listed below. During initial use, the name field appears blank.

Attempting to change the **Input Node Name** without closing the open windows for this node, prompts the following error message:



In order to change the input node Name:

1. Click **OK** on the above message.
2. Close all of the open windows related to the node on the display wall.
3. Enter the new name in the **Name** field.
4. Click **OK** to register the changes.

The **Comments** field is for entering user selectable information such as, node location.

5.5.6.1.2 1920x1080 Horizontal Width

Only HD Component or 3G-SDI input nodes contain the **1920x1080 Horizontal Width** section. By default, the **1920 (16:9)** mode is selected. However, to enable a higher frame rate choose the **1440 (4:3)** option.

5.5.6.1.3 Timing

If the input node is a DVI input node receiving an **RGB** signal, it will have an **Auto Adjust** Timing capability as shown in the figure below:

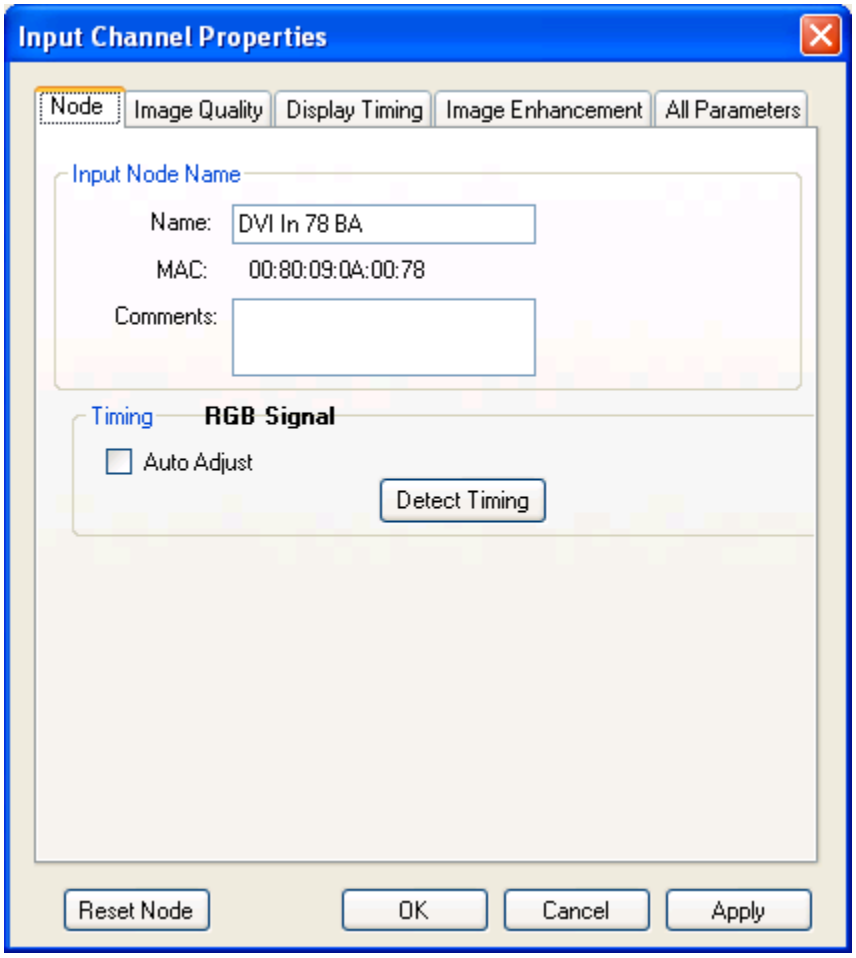


Figure 105 - Input Node—RGB Signal

When **Auto Adjust** is enabled, the RGB signal received will be auto adjusted to trim the excess edges.

Note	The **Auto Adjust** Timing feature is only enabled in the DVI input node, when receiving an **RGB signal**. This feature will take at least 30 seconds to complete.

If the input node is a DVI input node receiving a **DVI** signal, it will not have the **Auto Adjust** Timing capability. The **Auto Adjust** option will be grayed-out as shown in the figure below:

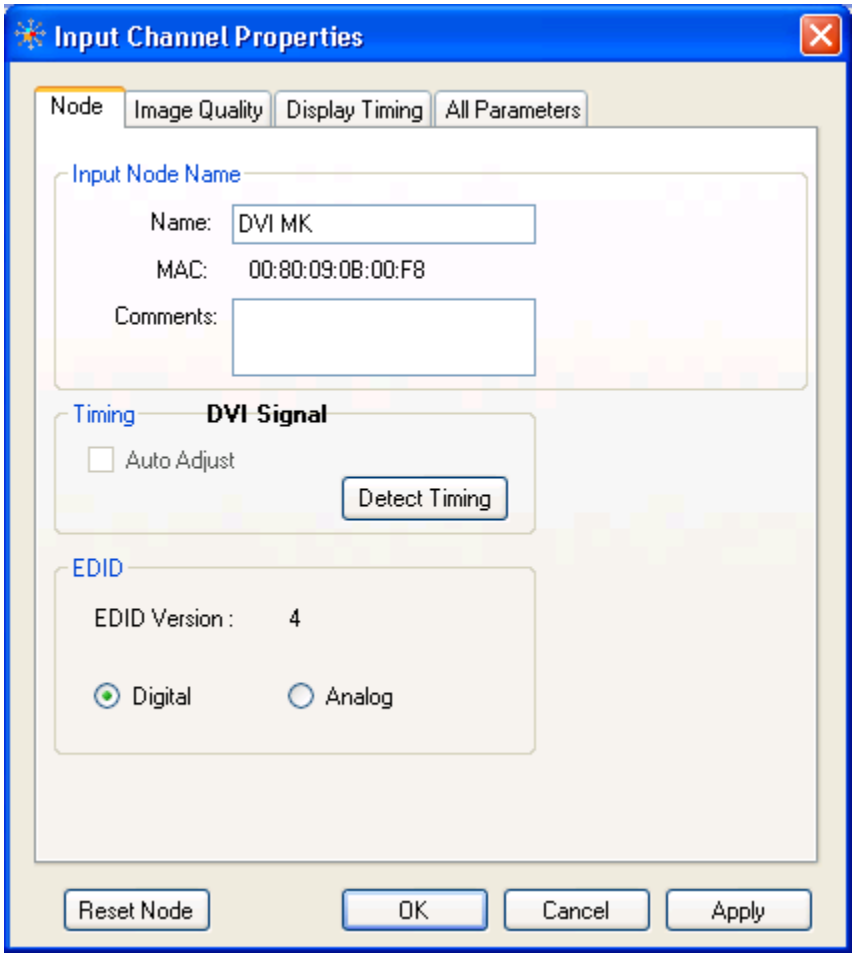


Figure 106 - Input Node—DVI Signal

Button:

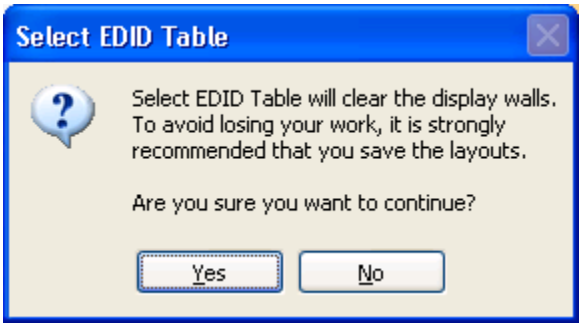
- **Detect Timing**—Click this to force the node to reconnect and submit the timing details to verify whether the reported timing parameters were accurate. This button need only be used if the timing parameters look suspiciously abnormal.

5.5.6.1.4 EDID

The **EDID** section is only present in DVI input nodes.

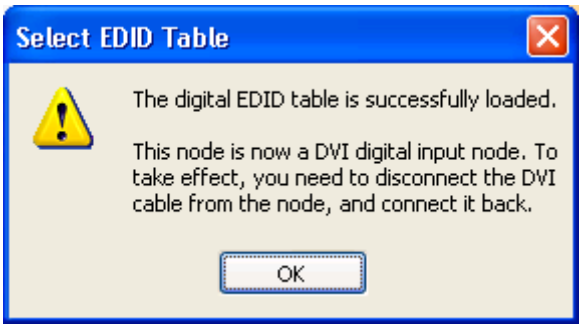
- **Digital or Analog**—Select either **Digital** or **Analog** as the preferred mode.

  When changing from one mode to another, ensure that all displays are closed on the display wall and save the layout. If even one display is open (irrespective of the node or source to which it belongs) the following message will appear.


Select EDID Table
Select EDID Table will clear the display walls. To avoid losing your work, it is strongly recommended that you save the layouts.
Are you sure you want to continue?
Yes
No

- **No—**Click **No** to revert to the wall and close any open displays or to just return to the previous mode.
- **Yes**—Click **Yes** to load (in 2-3 seconds) the preferred mode.

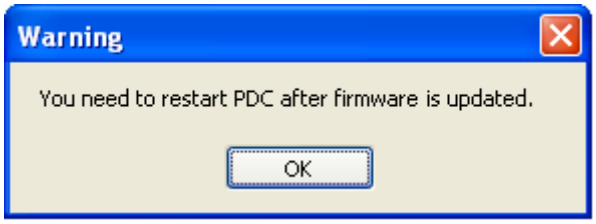
  After loading, the following message appears.


Select EDID Table
The digital EDID table is successfully loaded.
This node is now a DVI digital input node. To take effect, you need to disconnect the DVI cable from the node, and connect it back.
OK

Updating DVI Nodes

In order to change analog/digital mode update the firmware in older DVI nodes (i.e. nodes without the EDID section on the Node tab), .

1. Open the **Update Firmware** dialog (Tools→Update Firmware).
2. Click **Browse** to look for the ***EDID_Update_Dual.bin*** file from "C:\\Program Files\Jupiter\PDC\Firmware".
3. All the DVI input nodes will be listed in the Node column.
4. Select the node(s) whose mode will be changed.
5. Click **Update**. The following message will appear.



After restarting the PDC, the analog/digital mode can be changed as the EDID section is active.

6. Go to **Input Channel Properties-->Node tab-->EDID** section to change the mode from analog to digital or vice versa. The following message will appear:

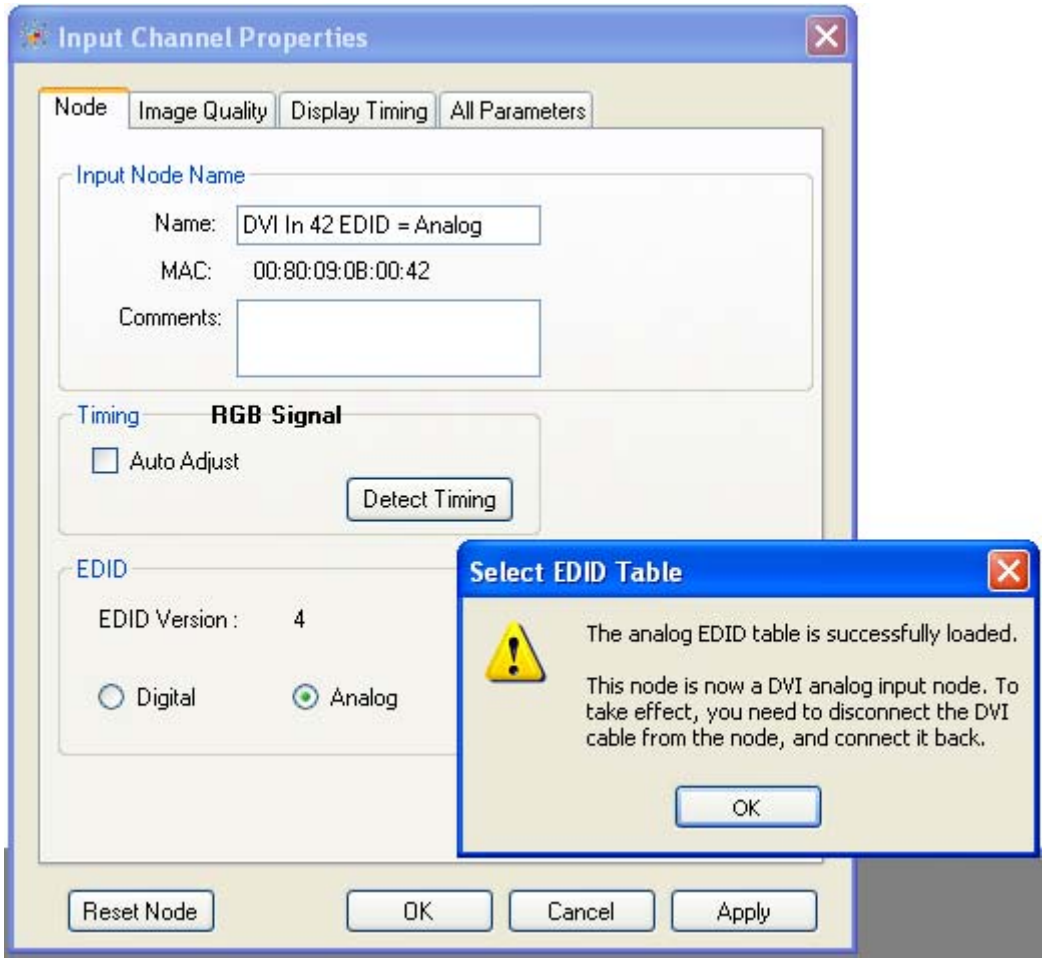


Figure 107 - Select EDID Table

Caution For every change in mode between analog and digital, disconnect the cable from the node and reconnect it. Failure to disconnect and reconnect the cable may cause the EDID feature to not function properly.

Video Format

The **Video Format** section is unique to the Quad SD input node. Designate the appropriate video format from the drop-down menu in this field.

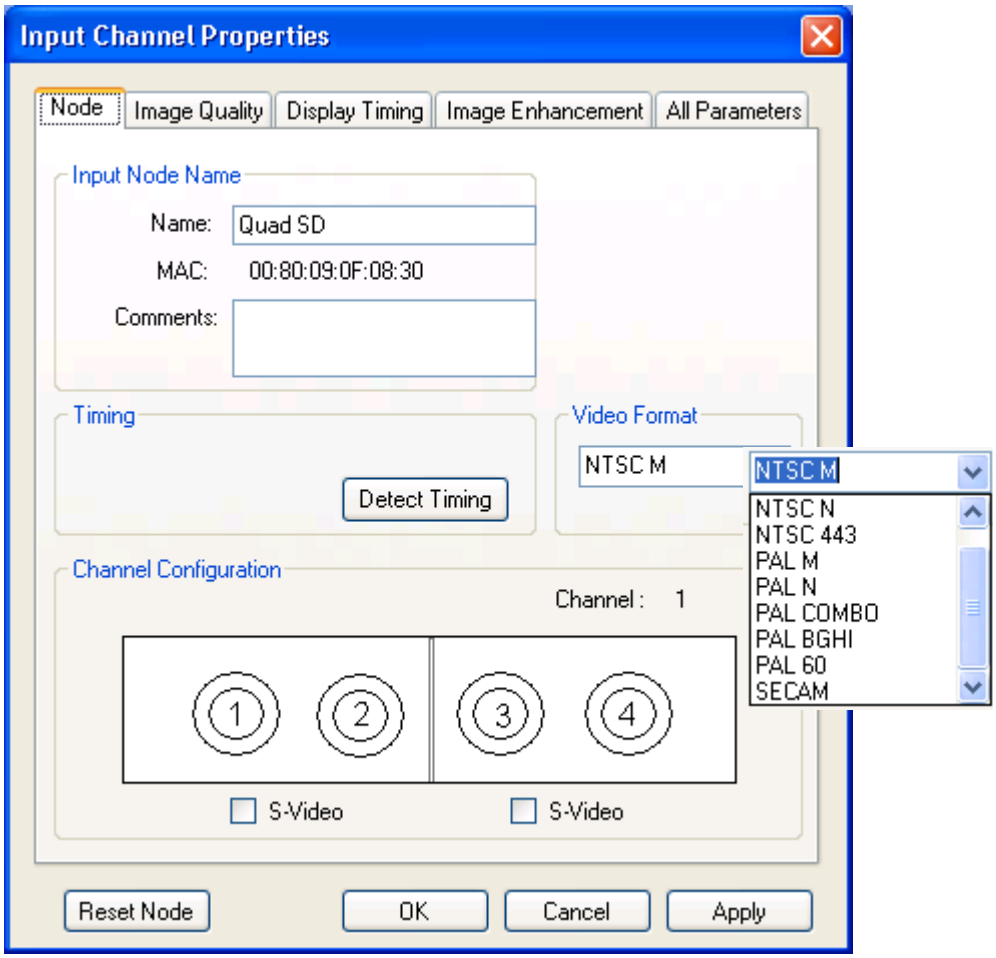


Figure 108 - Quad SD Input Node—Node Tab

Channel Configuration

The **Quad SD input node** has unique capabilities with regard to channels. The number of displayed channels varies based on how the inputs are configured to those channels. Within the Quad SD Input Channel Properties dialog, the channels and their configuration are graphical representations rather than a property/value pair.

Quad SD input node Channels are referred by <base-name>:1, <base-name>:2, etc. in the Channel list.

- Click on the corresponding check box to register an S-Video input connection to the Channel being edited. The non-corresponding check box will be disabled. Subsequently, the Channel that is associated with the other half of the pair is removed from the Channel list, and the remaining Channel is referred as <base-name>:1+2 or <base-name>:3+4.
- Disabling the checkbox will reconstitute the other half of the pair, and modify the names accordingly. User-modified properties (if any) will be inherited by the reconstituted Channel.
- If the channel configuration is changed, the configuration must be re-saved to activate the changes.

5.5.6.2 Input Channel Properties—Image Quality Tab

The Image Quality tab offers controls for Brightness, Contrast, Hue, and Saturation.

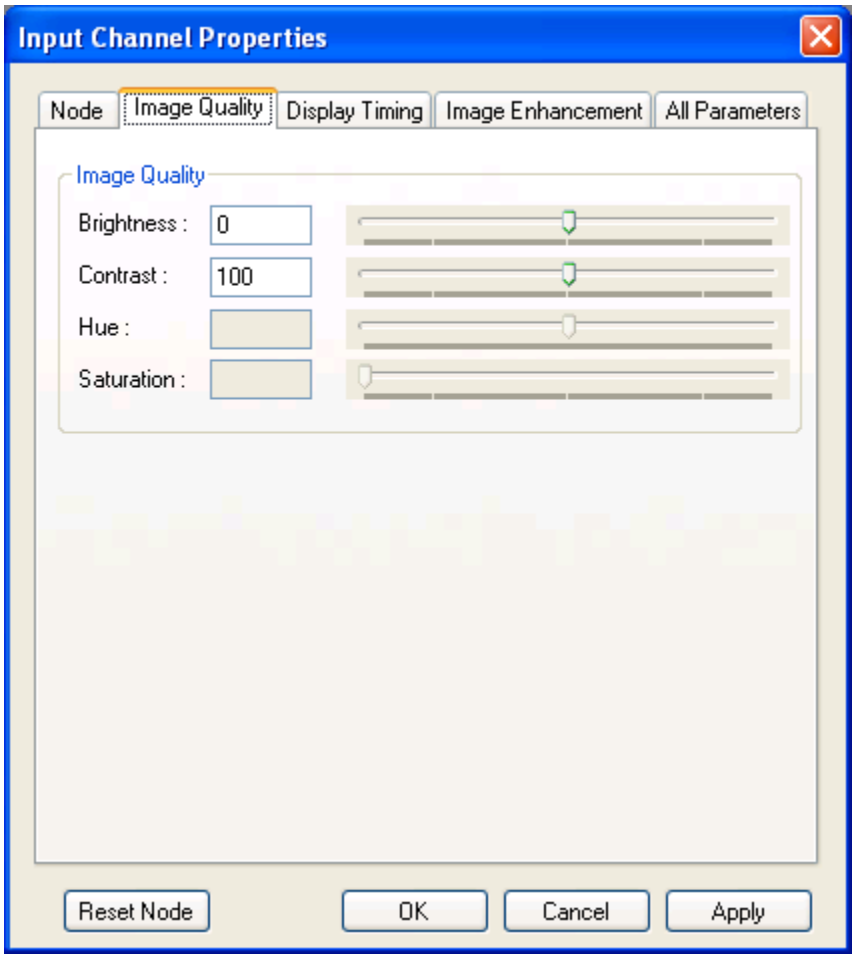


Figure 109 - Image Quality

Brightness
Set the desired image brightness by clicking on and selecting the Brightness slider control. Brightness can be set from –100 to +100%. Brightness changes the image from a very dark image on one end to a very bright on the other end.

Contrast
Set the desired image Contrast by clicking on and selecting the Contrast slider control. Contrast can be set from 0 to 200%.

Hue
Set the desired image hue by clicking on and selecting the Hue slider control. Hue can be set from –180 to +180 degrees. Hue changes the color balance of the image from green on one end to purple on the other end. Hue is not supported under the PAL format, and is not available as an option for RGB windows.

Saturation
Set the desired image saturation by clicking on and selecting the Saturation slider control. Saturation can be set from 0 to 200. Saturation changes the image from no color (black and white) to very saturated colors. Saturation is not available as an option for RGB windows.

5.5.6.3 Input Channel Properties—Display Timing

The **Display Timing** tab offers timing controls.

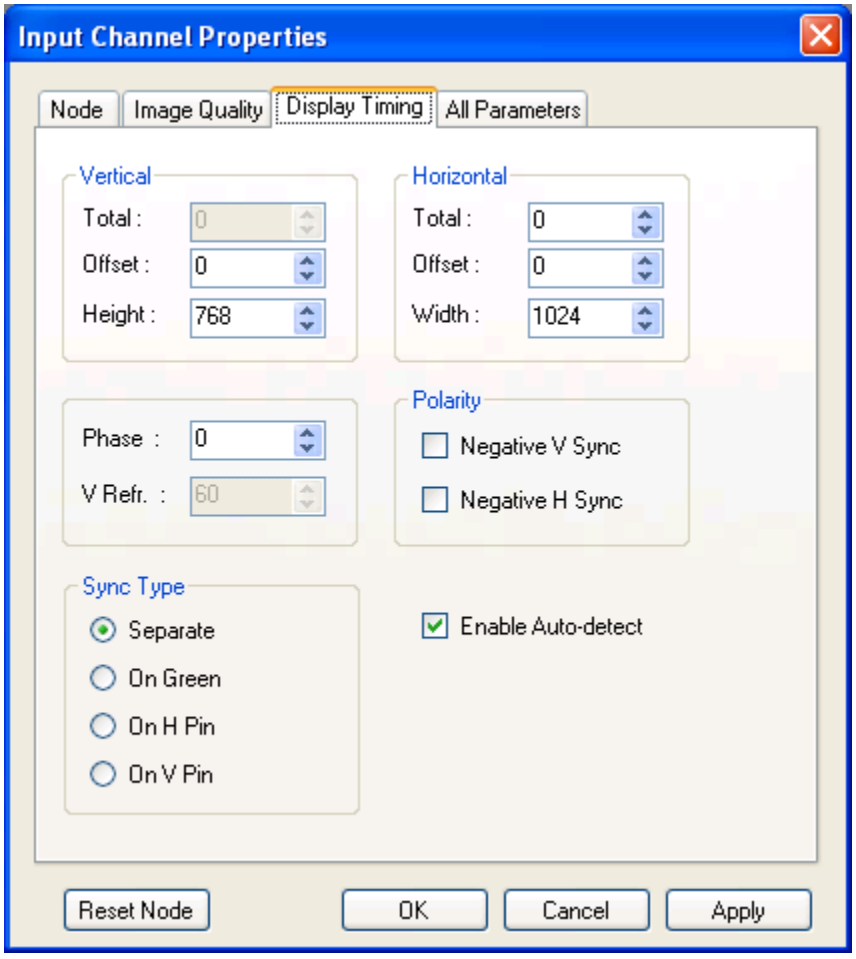


Figure 110 - Display Timing Tab

Vertical – Total

The Vertical Total parameter adjusts the total vertical timing. Vertical Total includes both the visible pixels and the retrace (or blanking) time.

Vertical – Offset

Vertical Offset has a range of from 1 to 200 and has the effect of positioning the screen image vertically within the display. This control allows you to move the image up and down within the display.

Vertical – Height

The Height parameter adjusts the displayed number of lines. The Height parameter usually will not need to be adjusted, except for an unusual signal. In most cases, blank lines will display.

Horizontal – Total
The Horizontal Total parameter adjusts the total number of pixels in a line. Horizontal Total includes both the visible pixels and the retrace (or blanking) time.

Horizontal – Offset
Horizontal Offset has the effect of positioning the screen image horizontally within the display. This control allows you to move the image back and forth sideways within the display.

Horizontal – Width
The Width parameter adjusts the displayed number of pixels. The Width parameter usually will not need to be adjusted. In most cases, you will display blank pixels in the blanking or sync area of the signal.

Sync Type
Sync Type shows you what type of sync pulse is detected. Sync types are shown below:
1. On H pin - Sync on Horizontal pin
2. On Green - Sync on Green
3. Separate - Horizontal on H pin, Vertical on V pin
4. On V Pin - Sync on Vertical pin

The table below shows on what connector pin you will find the sync signal for the various sync types shown.

Table 5: Sync Type

	Separate	On Green	On H	On V
H Sync	**H pin**	**G pin**	**H pin**	**V pin**
V Sync	**V Pin**	**G pin**	**H pin**	**V Pin**

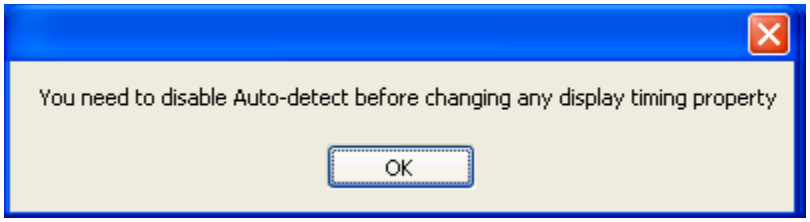
Phase
Phase adjusts the sample time on the pixel clock.

Vertical Refresh sets your scan rate. This setting has a range of from 0 to 60 Hz. Usually there is no need to set this, as it is set from the input signal.
Polarity
The **Negative VSync Polarity** (vertical sync) check box sets the polarity of the vertical sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

The **Negative HSync Polarity** (horizontal sync) check box sets the polarity of the horizontal sync pulse to a negative value. This check box will be checked automatically if the software detects a negative sync pulse.

Enable Auto-detect
This option automatically detects the timing and causes an auto refresh of the node when enabled.

Attempting to modify **Display Timing** properties when auto-detect is enabled will prompt the following message:



5.5.6.4 Input Channel Properties—Image Enhancement

The **Image Enhancement** tab provides additional controls to further enhance the image at a more granular level than the controls available on the **Image Quality** tab.

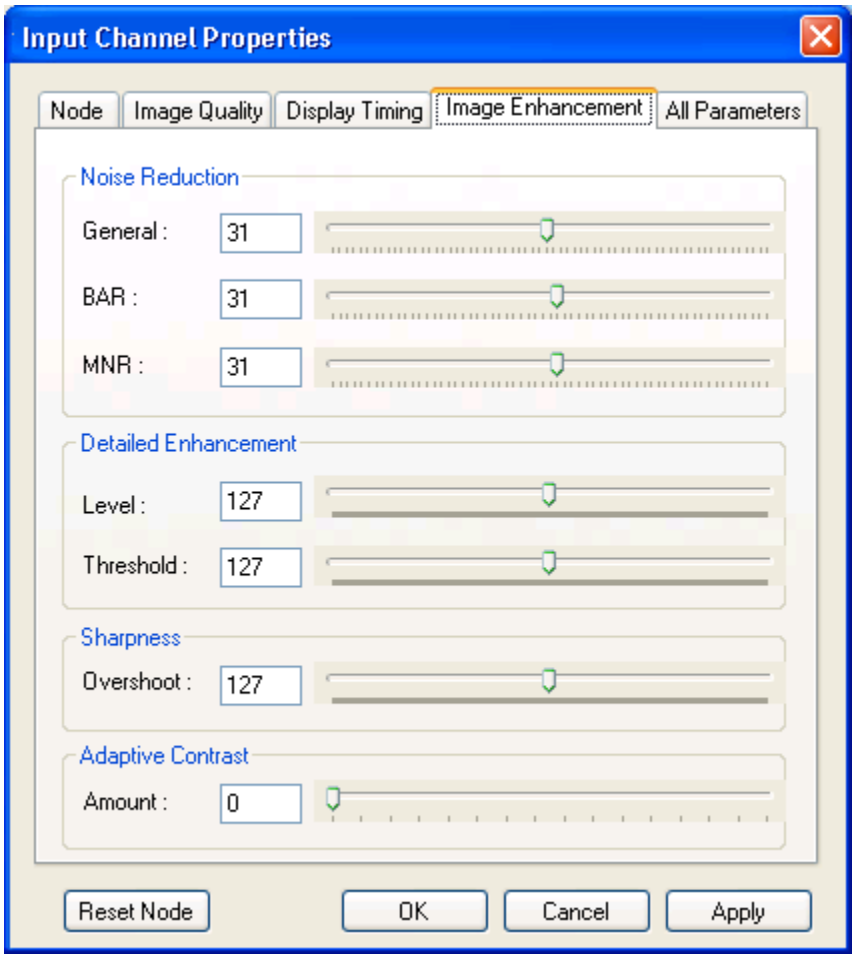


Figure 111 - Image Enhancement Tab

Noise Reduction

- **General:** This is General Noise Reduction (GNR). Set the desired GNR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the General slider control.
- **BAR:** This is Block Artifact Reduction (BAR). Set the desired BAR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the BAR slider control.

- **MNR:** This is Mosquito Noise Reduction (MNR). Set the desired MNR level by manually entering a numerical value between 0 and 63 or by click-selecting the value using the MNR slider control.

Detail Enhancement:

- **Level:** This is Detail Enhancement Level. Set the desired enhancement level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Level slider control.
- **Threshold:** This is Detail Enhancement Noise Threshold. Set the desired noise threshold level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Threshold slider control.

Sharpness:

- **Overshoot:** This is Edge Sharpness Overshoot. Set the desired overshoot level by manually entering a numerical value between 0 and 255 or by click-selecting the value using the Sharpness slider control.

Adaptive Contrast:

- **Amount:** This is Adaptive Contrast Enhancement Level. Set the desired enhancement Level by manually entering a numerical value between 0 and 15 or by click-selecting the value using the Amount slider control.

5.5.6.5 Input Channel Properties—All Parameters

The node properties and corresponding values are displayed in this tab. The supported list of properties and values varies depending on the type of node (**“Figure 112”** shows a 3G-SDI Input Node). For a more detailed description of different node types and their properties, refer to **"PixelNet Node Properties" on page 197**.

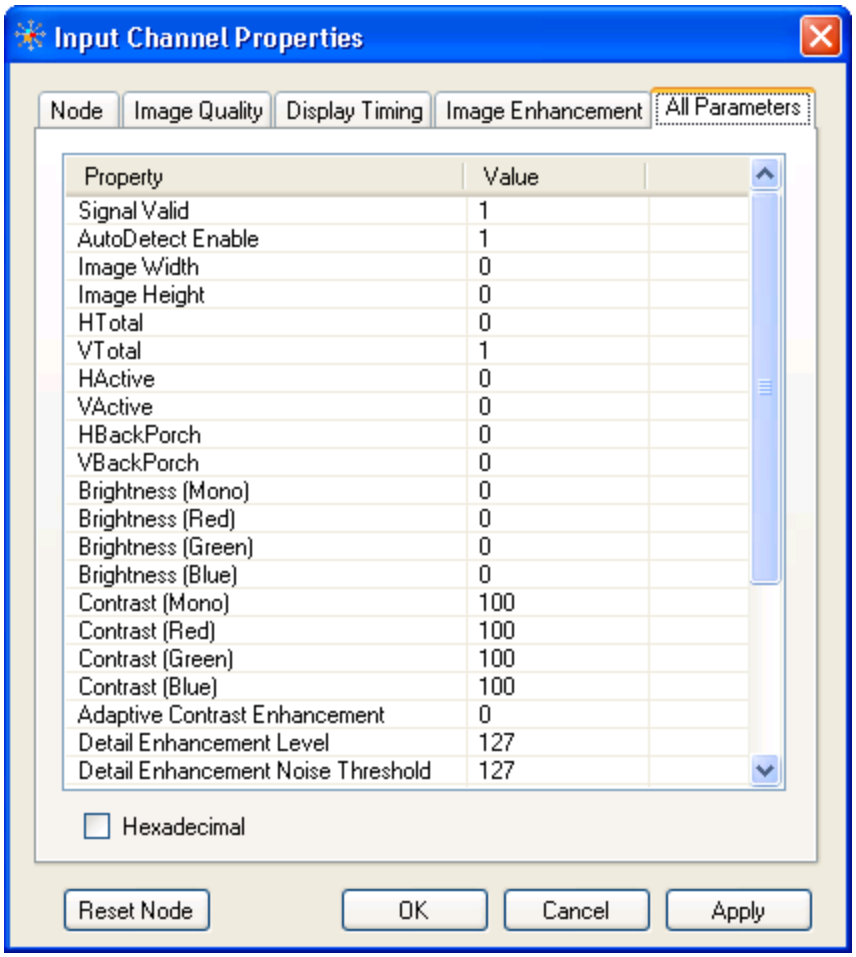


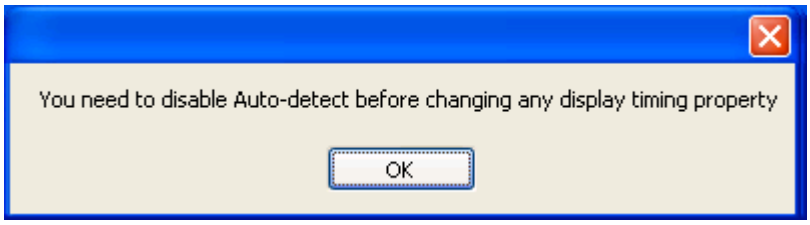
Figure 112 - 3G-SDI—All Parameters Tab

Buttons:

- **Reset Node**—Click this to reset the properties into the node.
- **OK**—Click this to load changes to Name, Comments, and properties into the node.
- **Cancel**—Click this to cancel changes to Name, Comments, and properties into the node.
- **Apply**—Click this to apply the changes without closing the dialog.

Selecting the **Hexadecimal** check box will display the property values as Hexadecimal numbers

Attempting to edit the value of any property when AutoDetect is enabled (i.e. set to ***1***, as shown in **"3G-SDI—All Parameters Tab" on page 148**) will trigger the following error message:



Turning off Autodetect
In order to edit property values, set the **AutoDetect Enable** value to ***0***.

Hexadecimal Value
To view the hexadecimal value of a property, mark the Hexadecimal checkbox in the **Change Property** window.

To view the hexadecimal values of all the properties in the **All Parameters** tab, mark the Hexadecimal checkbox to the left of the **OK** button.

Jupiter

Chapter 6—PixelNet Domain Control (PDC) Software

6. PixelNet Domain Control (PDC) Software

This chapter explains how to use the many functions of the PDC software.

6.1 PixelNet Domain Control Window

The PixelNet Domain Controller Window appears with the main frame window showing the **Title Bar**, **Tool Bar**, **Display Wall Tab**, **Audio Window** and the right frame showing the **Sources Tab** and **Outputs Tab**. The bottom frame contains the **Node Monitoring** panel with a **Window Bar**, and **Status Bar** beneath it.

6.1.1 Title Bar

The **PDC Title Bar** shows the layout and configuration file names. If the layout changes, an asterisk will appear behind the layout name (**"Figure 113" on page 151**). For example, moving or resizing a window changes the layout. The Title Bar serves as a reminder to save the layout to preserve these changes.

6.1.2 Tool Bar

The PDC Toolbar, in the upper left-hand corner of the main window, provides the following menu items:

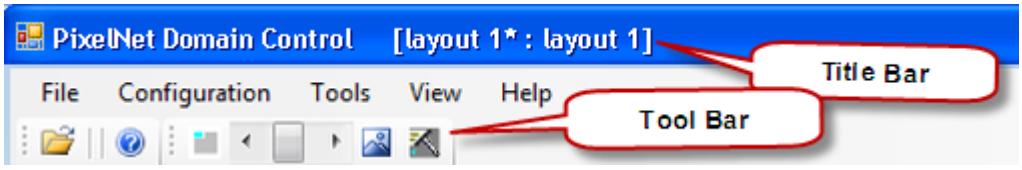


Figure 113 - PDC Toolbar

Opens a saved layout

Opens the Help menu

Provides information about the window's display dimensions and update rate in frames per second (fps).

Adjusts the contrast of the window information text box

Right-click menu for the slider bar where the movement is dictated by the chosen menu item:

- **Left Edge**—moves the bar to the extreme left
- **Right Edge**—moves the bar to the extreme right
- **Page Left**—moves the bar a few notches left
- **Page Right**—moves the bar a few notches right
- **Scroll Left**—moves the bar one notch left
- **Scroll Right**—moves the bar one notch right

Refreshes the thumbnails of all the windows with the latest received input data

Closes all the windows

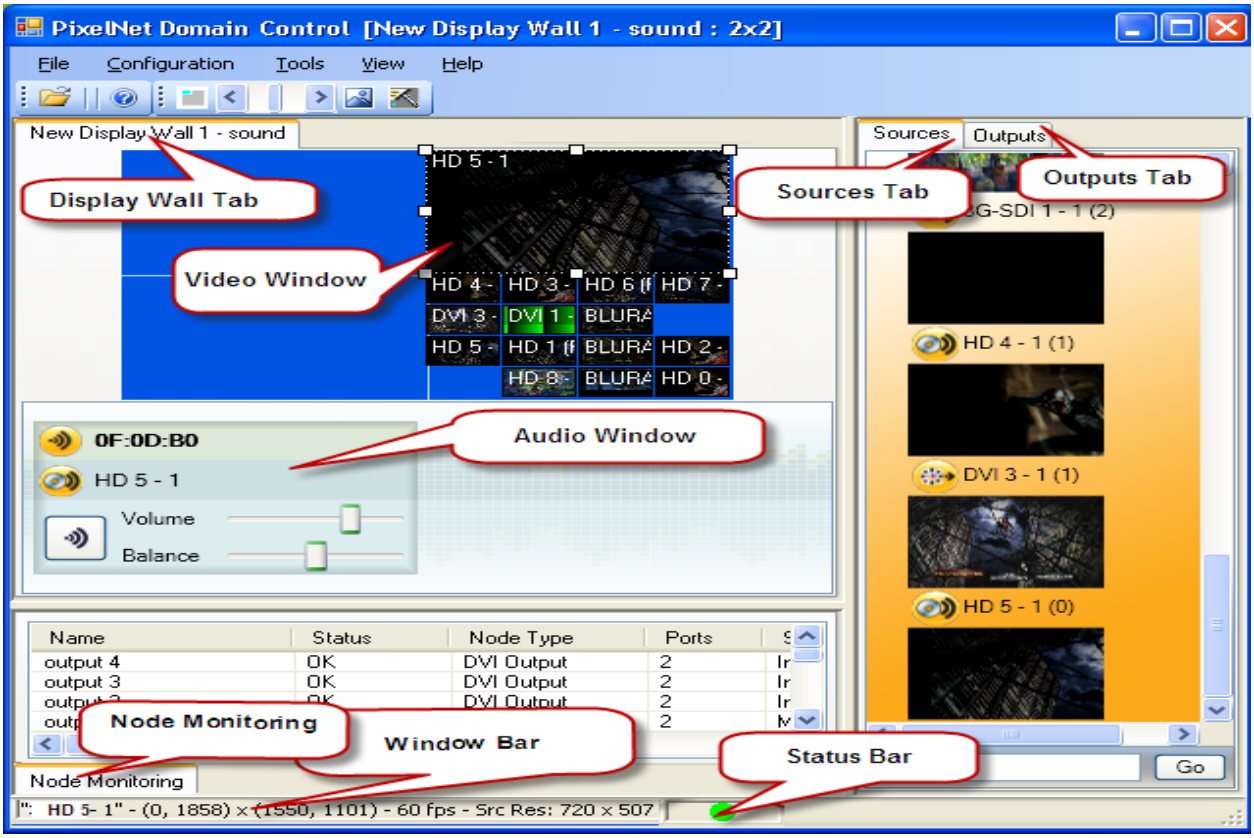


Figure 114 - PDC Window

6.1.3 Display Wall Tab

The Display Wall tab is the main panel of the PDC Window as shown above. The display wall displays the windows by the assigned layout (if one is applied). The windows on the display wall mimic are a representation of the sources. The content shown in each window is a sample of the input at a reduced resolution (320 x 240), a *thumbnail*. Regardless of the original resolution, the thumbnail always represents the node at 320 x 240; hence, the aspect ratio is not preserved in the thumbnail.

6.1.4 Audio Window

Whether the Audio window is displayed or hidden is controlled by the "PDC View Menu" on page 194 which is explained later in this chapter. The audio window displays the following:

- Name of the audio output or MAC address if no name is given.
- Audio source that is currently associated with this audio output.
- Icon indicating audio in play mode:

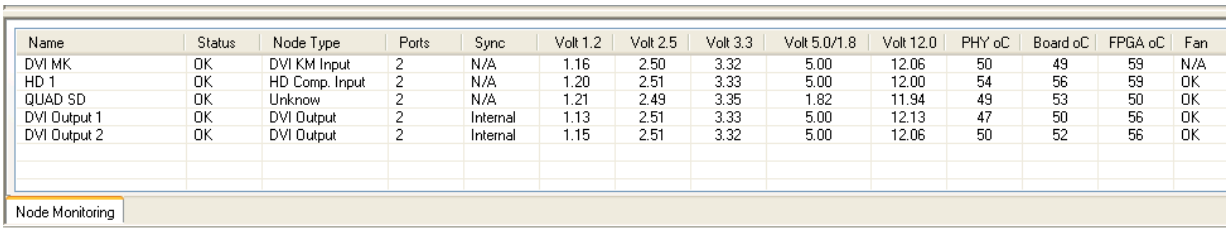
- Icon indicating muted audio:

Note This icon is actually a button. Clicking on the button toggles the audio state between play and mute and changes the icon.

- Two sliders - one to control the output volume and one for left/ right balance.

6.1.5 Node Monitoring

Node Monitoring shows the operating parameters of the input and output nodes. If a parameter value exceeds or drops below the programmed limits, it will be highlighted in red for your attention. Refer to "Node Monitoring" on page 194 for more information.



Name	Status	Node Type	Ports	Sync	Volt 1.2	Volt 2.5	Volt 3.3	Volt 5.0/1.8	Volt 12.0	PHY oC	Board oC	FPGA oC	Fan
DVI MK	OK	DVI KM Input	2	N/A	1.16	2.50	3.32	5.00	12.06	50	49	59	N/A
HD 1	OK	HD Comp. Input	2	N/A	1.20	2.51	3.33	5.00	12.00	54	56	59	OK
QUAD SD	OK	Unknow	2	N/A	1.21	2.49	3.35	1.82	11.94	49	53	50	OK
DVI Output 1	OK	DVI Output	2	Internal	1.13	2.51	3.33	5.00	12.13	47	50	56	OK
DVI Output 2	OK	DVI Output	2	Internal	1.15	2.51	3.32	5.00	12.06	50	52	56	OK

Node Monitoring

Figure 115 - Node Monitoring

6.1.6 Window Bar

The window bar shows information about the selected window, source, node type, layout dimensions, display resolution, and the number of frames per second (fps).

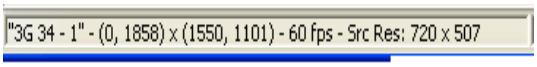


Figure 116 - Window Bar

6.1.7 Status Bar

A green circle indicates that all nodes are in nominal operating conditions. A red circle lights up on the status bar to indicate that one or more nodes have exceeded or failed to maintain the required parameter values.

Figure 117 - Status Bar

The **"Sources Tab"** and **"Outputs Tab"** are discussed in greater detail later in this chapter.

6.1.8 Window Right-Click Menu

Right-clicking on a display wall window provides the following options:

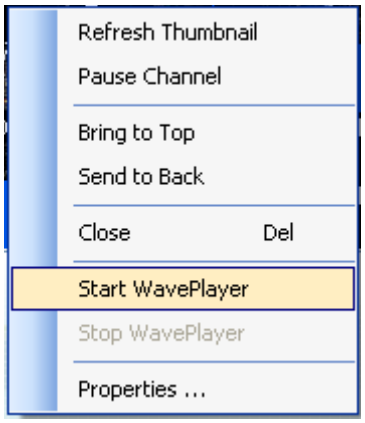


Figure 118 - Window Right-click Menu

6.1.8.1 Refresh Thumbnail

This menu item refreshes to show the latest content of the input in the window. Double-clicking the window will also refresh the thumbnail.

6.1.8.2 Pause Channel

This menu item acts like the Pause button in a DVD player. Selecting this pauses the input signal; the window contents will freeze.

6.1.8.3 Bring to Top

This menu item places the selected window over all other windows.

6.1.8.4 Send to Back

This menu item places the selected window behind all other windows.

6.1.8.5 Close

This menu item closes window and removes it from the display wall. This action can also be completed by hitting the **Del** key.

6.1.8.6 Start WavePlayer

This menu item plays the sound from the selected audio node display.

6.1.8.7 Stop WavePlayer

This menu item stops playing the selected audio.

6.1.8.8 Properties

This menu item launches the **Window Properties** dialog. Changes to properties will only be saved when a layout is saved.

The **Window Properties** dialog has the following tabs:

- Window
- Cropping
- Color Space
- Frame & Title

6.1.8.8.1 Window Tab

- **Source Information**: This displays the **Name** and **Type** of the source shown in the selected window.
- **Window Coordinates**: This displays the window location and dimensions. Enforcing the Lock Aspect Ratio ensures that size adjustments to the window maintain the original width to height ratio.

.

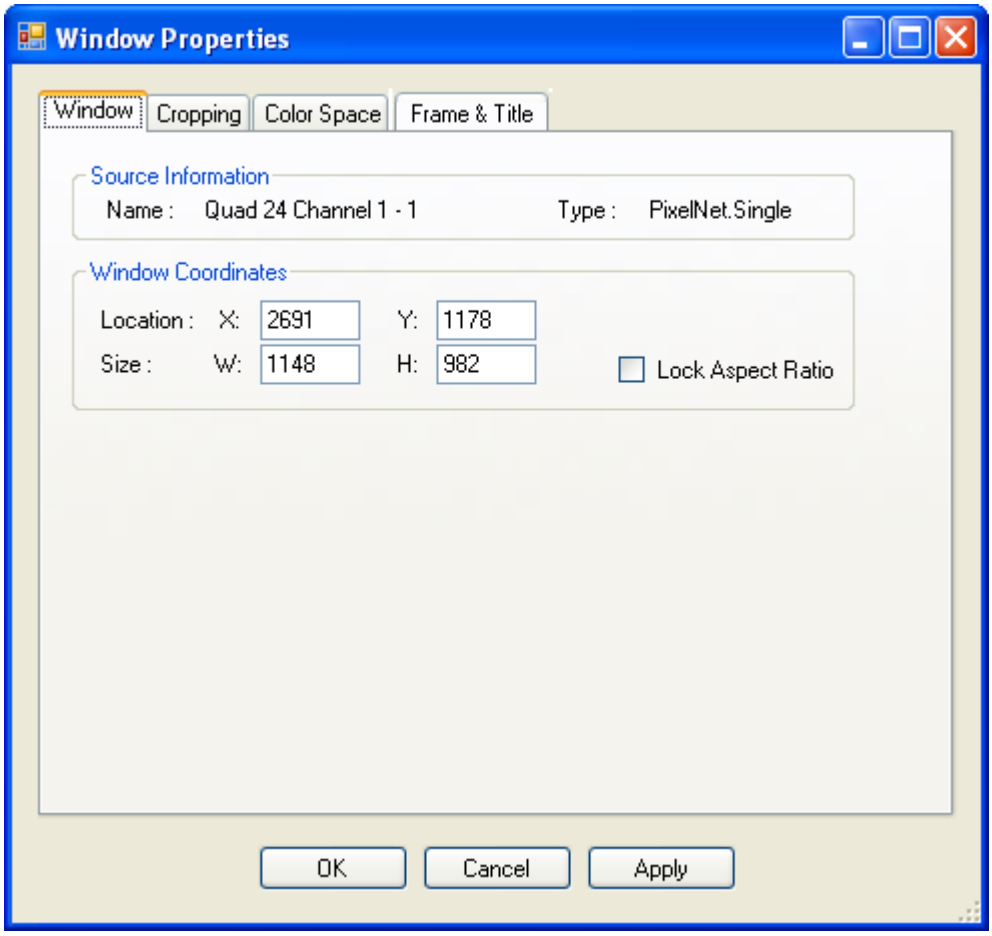


Figure 119 - Window Properties Dialog—Window Tab

6.1.8.8.2 Cropping Tab

- **Cropping**: This section allows cropping the window on all four sides by entering the values or using the numeric up/down control.
- **Transparency:** The Transparency slider allows the cropped area to be viewed in varying degrees of transparency. Using the Transparency slider, adjust the image by gauging how much is being cropped from the original image.

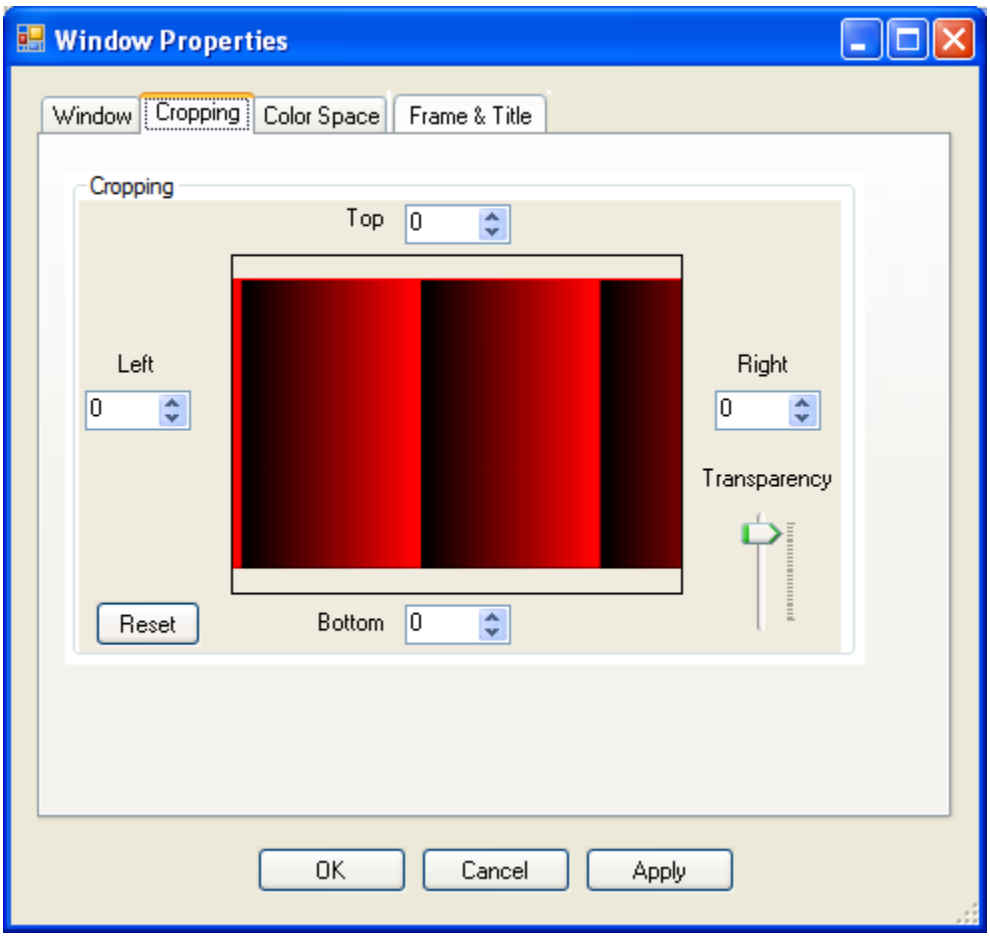


Figure 120 - Transparency

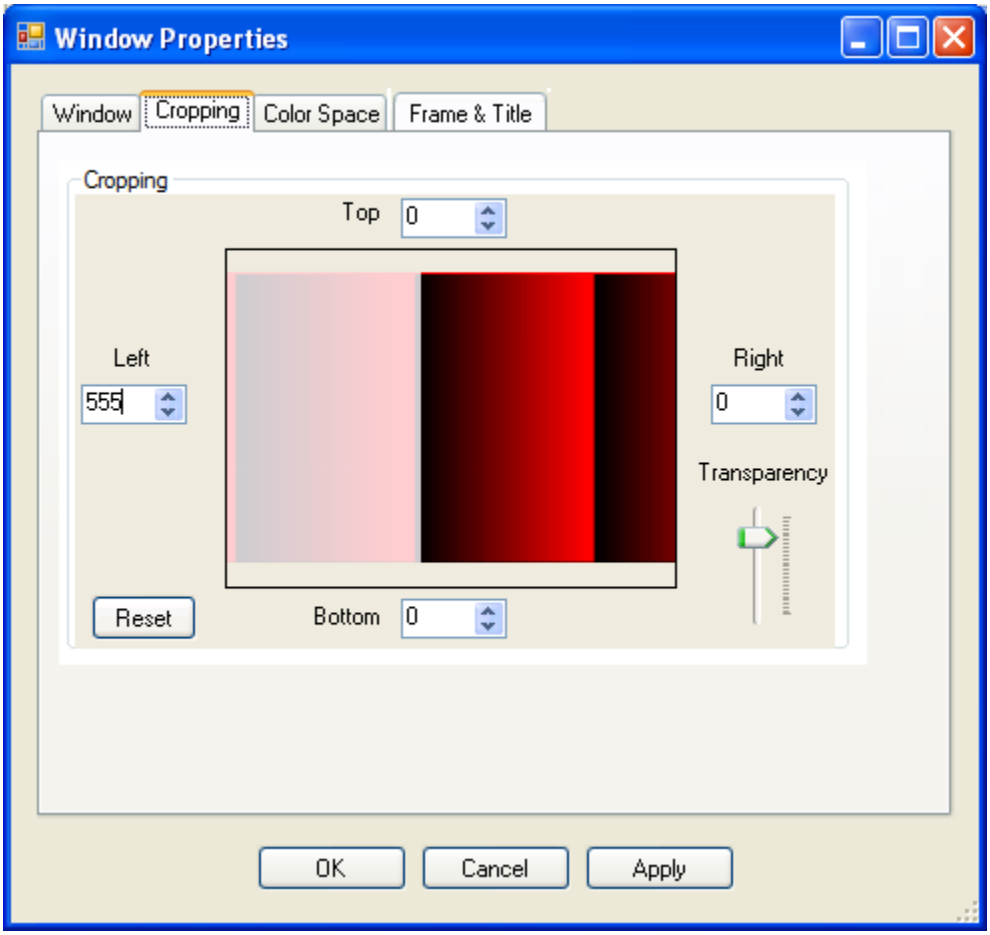


Figure 121 - Transparency Adjusted

"Figure 120" on page 158 and **"Figure 121" on page 159** show two different adjustments for comparison.

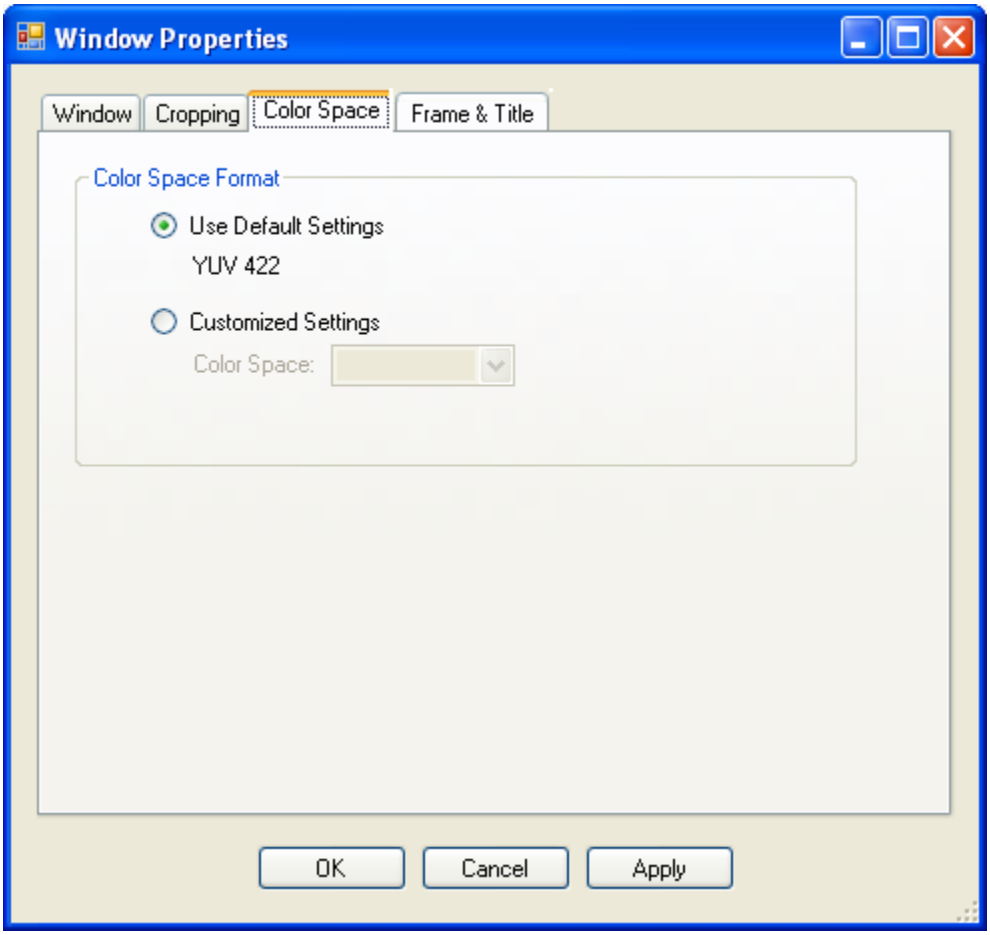


Figure 122 - Color Space Tab

6.1.8.8.3 Color Space Tab

- **Color Space Format:** This section has two options:
  - **Use Default Settings**—This is the default color setting selected for all windows on the wall.
  - **Customized Settings**—This setting allows a specific format to be used for this window only.

6.1.8.8.4 Frame & Title Tab

This tab offers the option of displaying a window on the wall with a colored border and title. By applying border frame and title, a particular window and specific information about it can be highlighted and distinguished amidst a slew of open windows.

Note The **Show Frame & Title** option must be selected in order for the frame and title to display on the window.

Title Bar Options

- **Show Title**: Select this option to activate all the grayed-out fields under the **Title Bar Options, Title Text, Text Justification,** and **Title Position** sections.
- **Over Video**: Select this option to place the title over the window's video display. Without selecting this option, the **Title Overlay** section can not be activated.
  - Choose desired values in the **Minimum Height, Title Color, Title Text, Font**, and font size fields.

Text Justification

- This section offers three adjustments to the title's horizontal placement—the text can either be left justified, centered, or right justified.

Title Position

- This section offers three adjustments to the title's vertical placement—the text can either be placed on top, bottom, or in the middle, right over the video display on the window. However, for the middle placement, the **Over Video** option must be selected first as the middle placement constitutes an overlay.

Title Overlay

This section allows more granular adjustments to the title with the option to add a background color for the overlaid text.

- Click the **Back Color** field to prompt a color matrix from which to select the background color.
- Select the **No Back Color** option to not use a separate background color for the title.

- The **Transparency** slider controls the degree of visibility for the background color. This is similar to the transparency slider used in the **"Cropping Tab" on page 158**.
- **Offset**—This option allows to position the overlaid title by adjusting the offset coordinates. To offset the title at a specific distance from the left or right, use the up or down **Horizontal** field values. To offset the title from the bottom or top of the window frame, use the **Vertical** field values.

Frame Options

This section provides options for designating the width and color of the border frame. While the border frame automatically accommodates an increase in font size or title bar height, the **Width** field provides another control option. Click the **Frame Color** field to choose a color for the frame from the prompted color matrix.

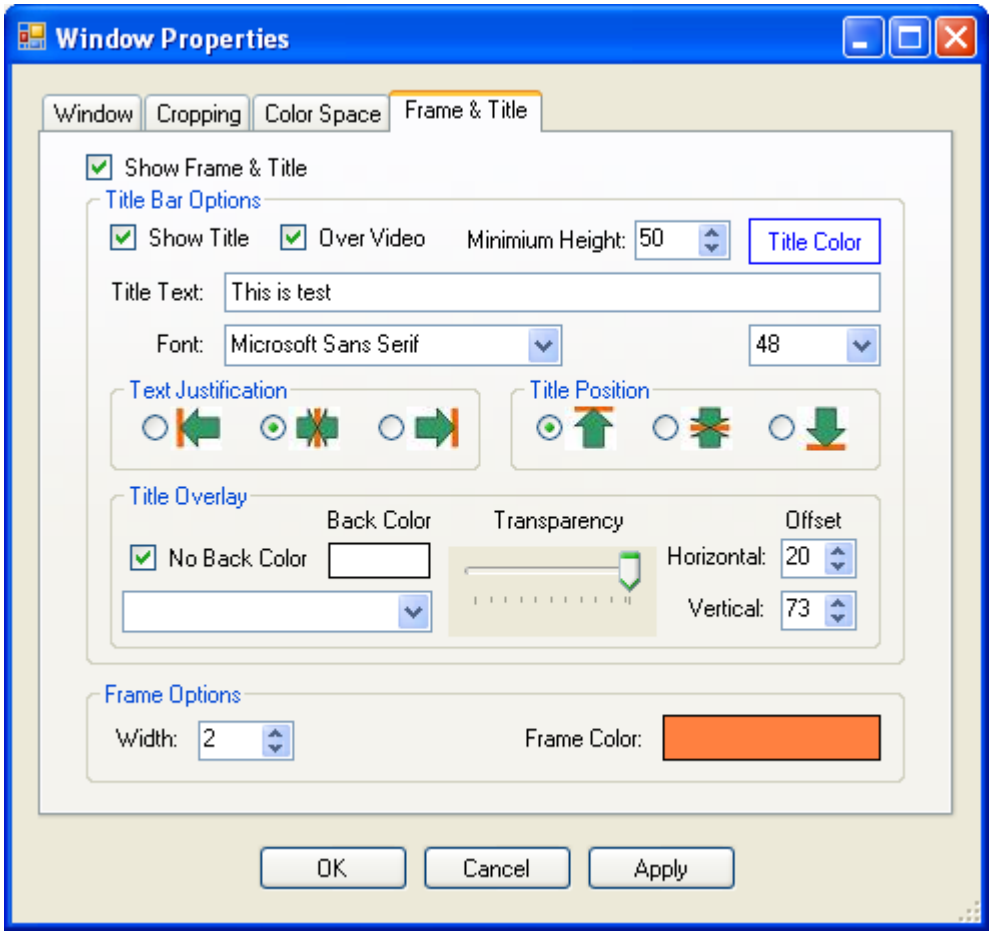


Figure 123 - Frame & Title Tab

Buttons:

- **OK**—Click this to load changes made to one or more options and close the dialog after.
- **Cancel**—Click this to cancel changes to the specific tab, but continue with the other tabs without closing the entire dialog.
- **Apply**—Click this to apply the changes made on the specific tab, and continue with the other tabs without closing the entire dialog.

The following image shows a display wall window with a colored border frame and title.

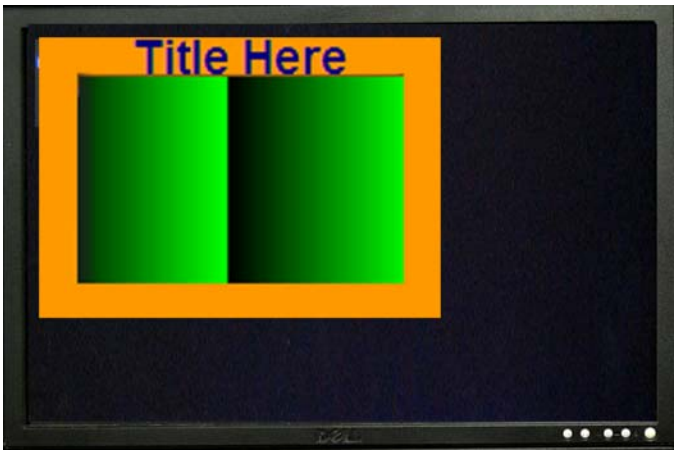


Figure 124 - Display Wall Window with Frame & Title

6.1.8.9 Window Title—Wildcard Symbols

PDC offers several predefined wildcard symbols that can be used to display more window attributes such as dimensions and location or provide additional information such as time of day, date, or year.

For a complete list of all the wildcard symbols along with their description and usage, refer to **Table 6 on page 164**.

Using Symbols

Add a **%** sign as a prefix for every wildcard symbol used. For instance, to display “Source name” and “Current time in 24-hour format”, enter the following in the **Title Text** field: **%N%T**. A non-symbol character or extra space between two symbols can be incorporated into the title without any adverse effect.

Table 6: Window Title—Wildcard Symbols

Symbol	Expanded Representation	Example	Variances based on Source Type			
			Single Channel Sources	Multi-Channel Sources		
				Group	Gang	Clone
d	Current date in short format	6/30/2009	N/A			
D	Current date in long format	Monday, June 29, 2009				
T	Current time in 24-hour format	14:13				
t	Current time in 12-hour format	2:13 PM				
S	Source Type	Grouped Source	Source	Grouped source	Ganged Source	Cloned Source
i or I	Input channel type	HD COMP	One of: 1.HD Comp 2.Quad SD 3.DVI 4.DVI-KM 5.3G SDI	First input channel type		Actual input channel type
N	Source name	Any Text	Name of the source associated with the window			
n	Input node name	Any Text	Input node name	First input node name		Actual input node name
m or M	MAC address of node correspond-ing to source name	00:80:09:0C:00:6A	MAC address of the node whose source is associated with the window	MAC address of the first node in the group or gang		MAC address of the specific node assigned to that window via the clone source
r or R	Input source reso-lution	1024x768	Input reso-lution	Resolution of the first channel in the group, gang or clone		
c or C	Window color depth	16-bit RGB	N/A			
f or F	Window update frame rate	60	Number of frames per second for the window. For groups, this is the update rate of the first source used in the group.			
l or L	Window location on the wall	480,300	Coordinates of the upper left-hand corner of the window relative to the start of the wall			
s	Window size	1440x900	Window size in pixels in the format: <horizon-tal>x<vertical>			
v or V	PDC version num-ber	1.1.0.46	Version number of the currently running version of PDC			

6.2 Sources Tab

Click on the **Sources** tab in the right panel for the selected display wall to display the list of sources for the domain as shown below. Below the thumbnail for each input, the source name, source type, and resolution of the source are presented. The list of sources is sorted in alphabetical order.

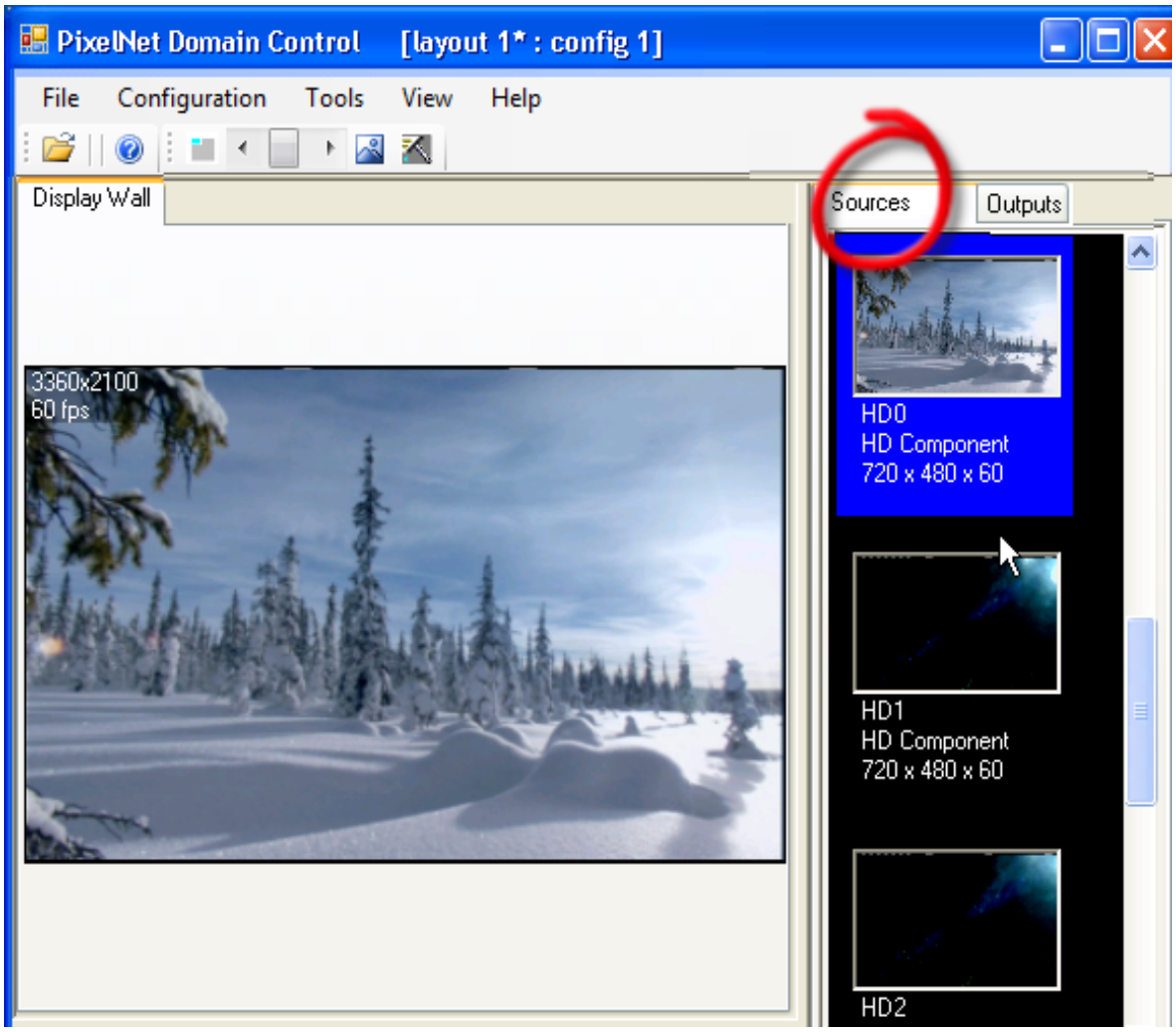


Figure 125 - Display wall showing one input

Note	The sources will be displayed by default by their MAC address. When a name is entered, it will be displayed.

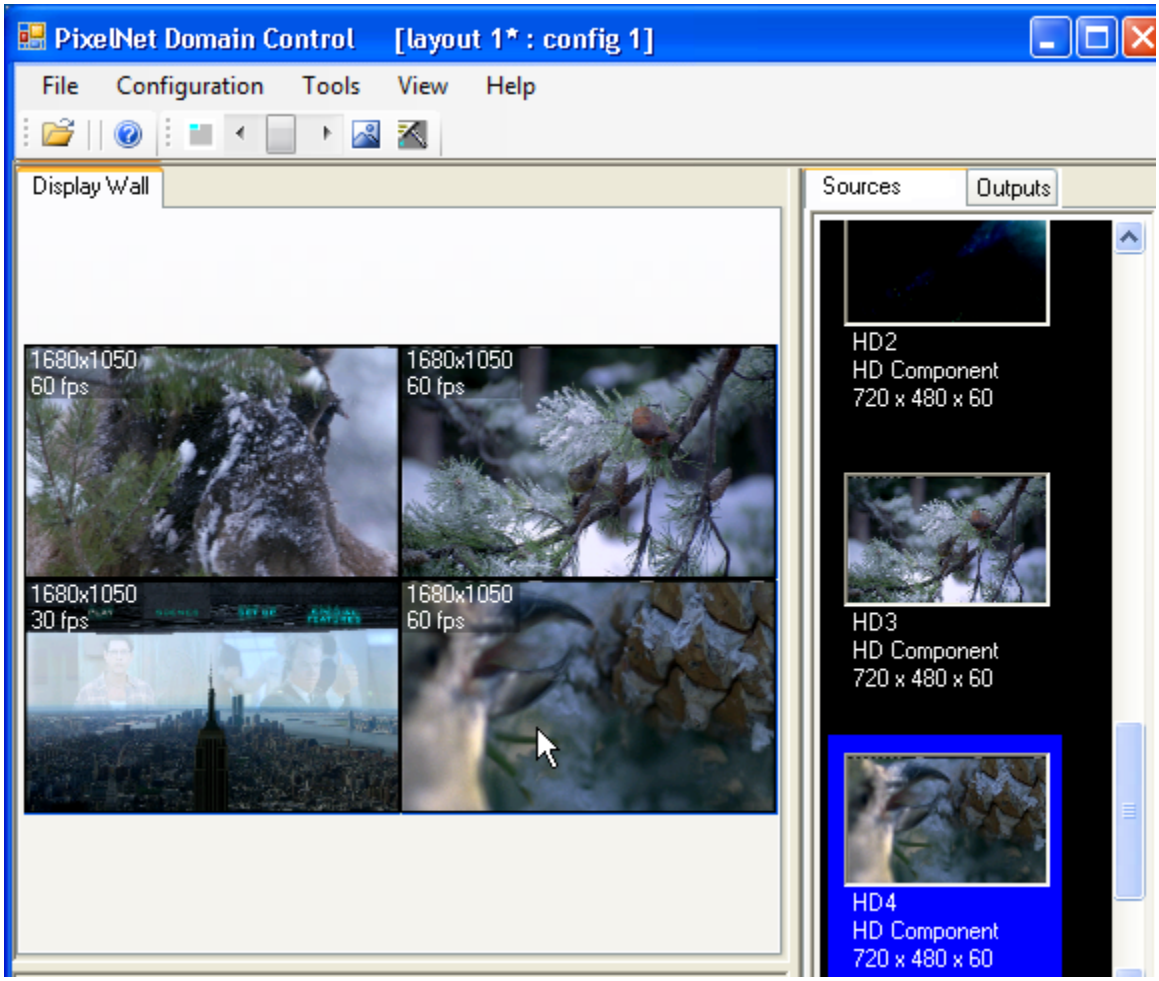


Figure 126 - Display wall showing four inputs

Note Selecting a window in the display wall highlights the corresponding source in the sources panel as shown in **"Figure 126" on page 166**.

6.2.1 Dual Streams

Each input source can have a maximum of two streams to provide input to two windows on the display wall. These two windows can have different properties, such as location or size. In the Sources tab, the number on the top right corner of the input source thumbnails denotes the number of streams available for display on the display wall.

For instance, if the right corner of a thumbnail reads “1” (as shown in **“Figure 127” on page 167**; highlighted by a red circle) it means one stream is still available for display on the wall for that input source.

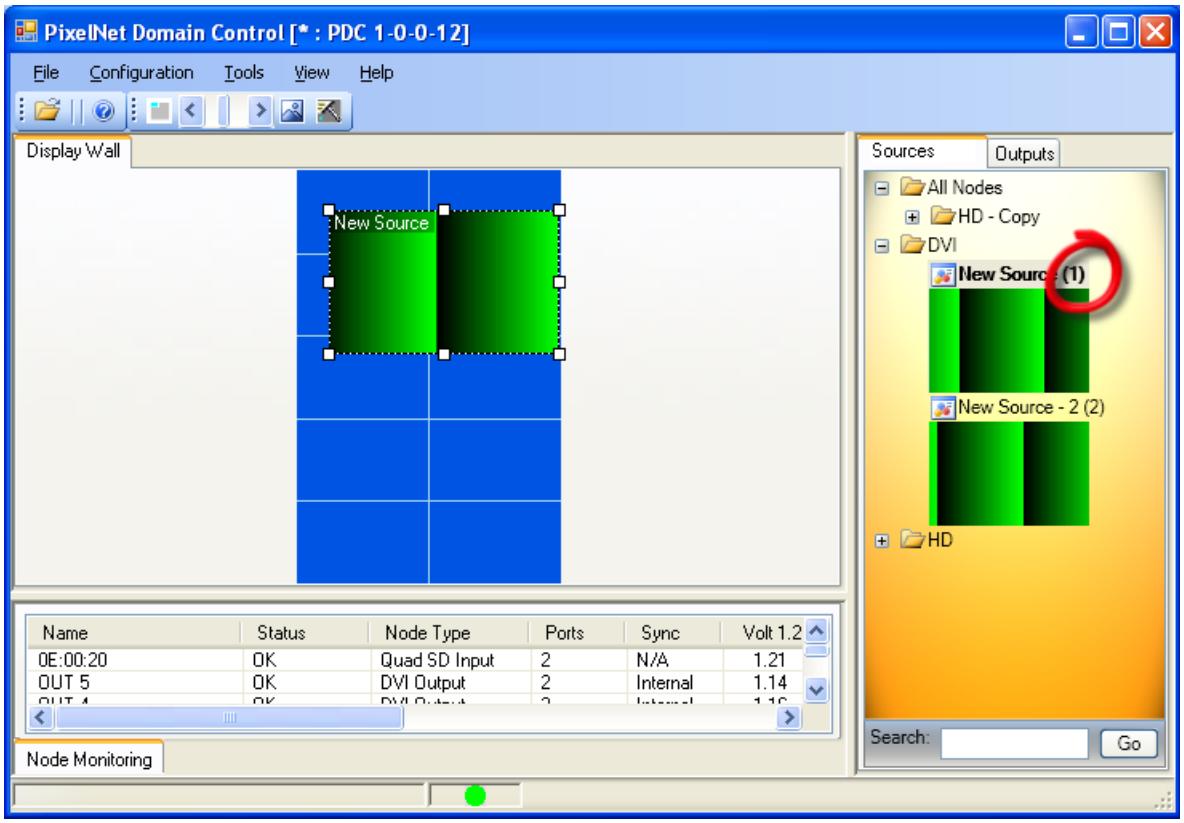


Figure 127 - One available input stream

If the number reads “0”, (as shown in **“Figure 128” on page 168**; highlighted by a red circle) both streams of that particular input source are already being displayed on the display wall. Similarly, if the number reads “2”, neither of the input source’s two streams are displayed on the wall.

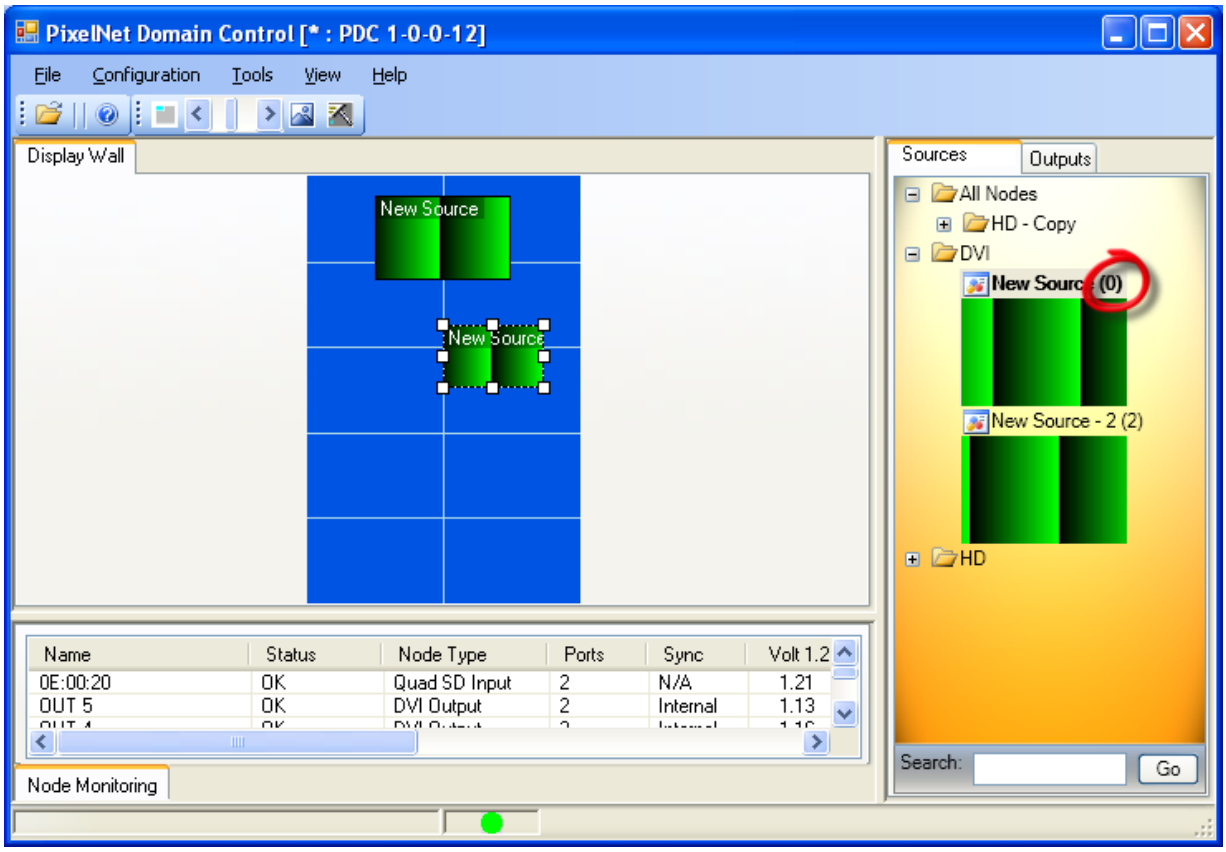


Figure 128 - Zero available input stream

6.2.2 Input Source Right-click Menu

Right-clicking on a source brings up two menu items:

- **Properties—**This menu item launches the dialog, **"Source Properties" on page 169**.
- **Refresh Thumbnail—**This menu item refreshes the thumbnail of the selected input source. Double-clicking the thumbnail will also refresh it.

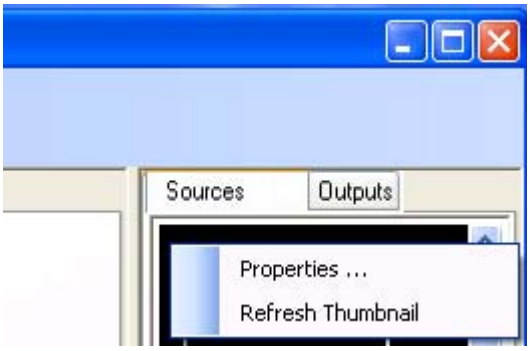


Figure 129 - Right-click Menu

6.2.3 Source Properties

Double-click on a source or click on Properties from the Source Right-click menu. The following dialog appears:

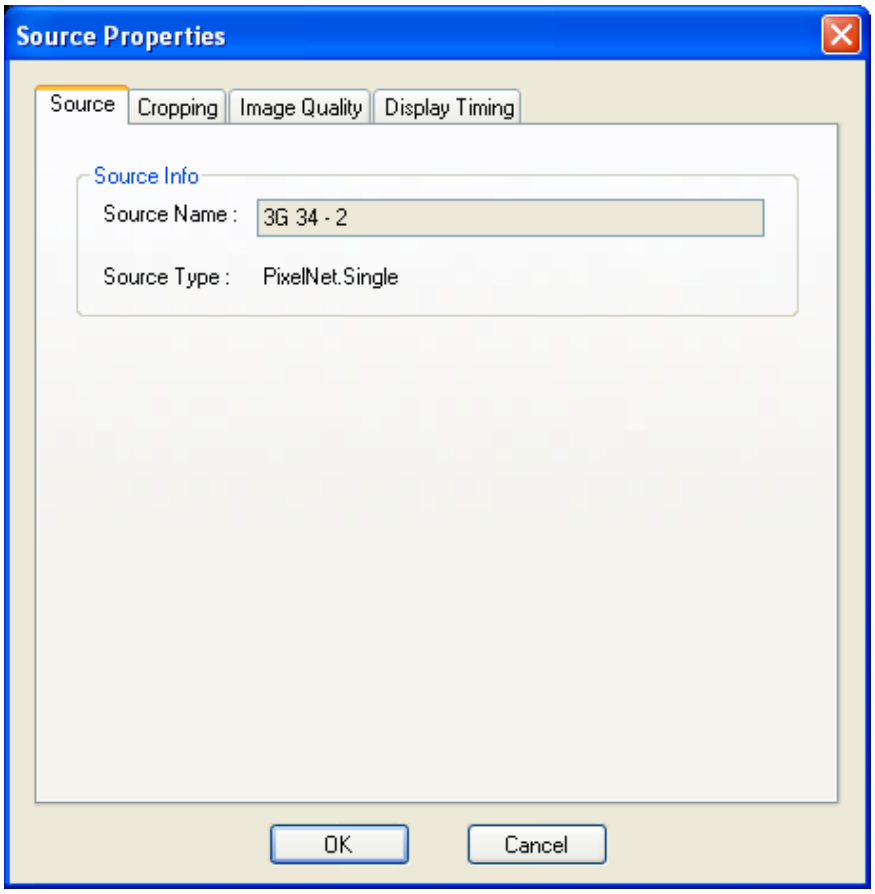


Figure 130 - Source Properties

Note When accessed from the **Sources** tab of the PDC software, the **Source Properties** dialog is read-only on the Cropping, Image Quality, and Display Timing tabs. Only the **Source** tab and **Image Enhancement** tabs (where applicable) can be edited. Access the **Source Properties** dialog from the **Configuration** menu to make any changes to the Source Properties. Refer to, **"Source Properties" on page 118** for more information on setting or changing source properties.

6.2.4 Sorting Options

The Sources tab offers two options to display sources. Right-click on the Sources tab to view the two sorting options as shown in the figure, **“Figure 131” on page 171**:

- **Sorted by Name**—As the default, this option displays the sources by their names.
- **Sorted by MAC**—Click on this menu item to display all the sources by their MAC addresses.

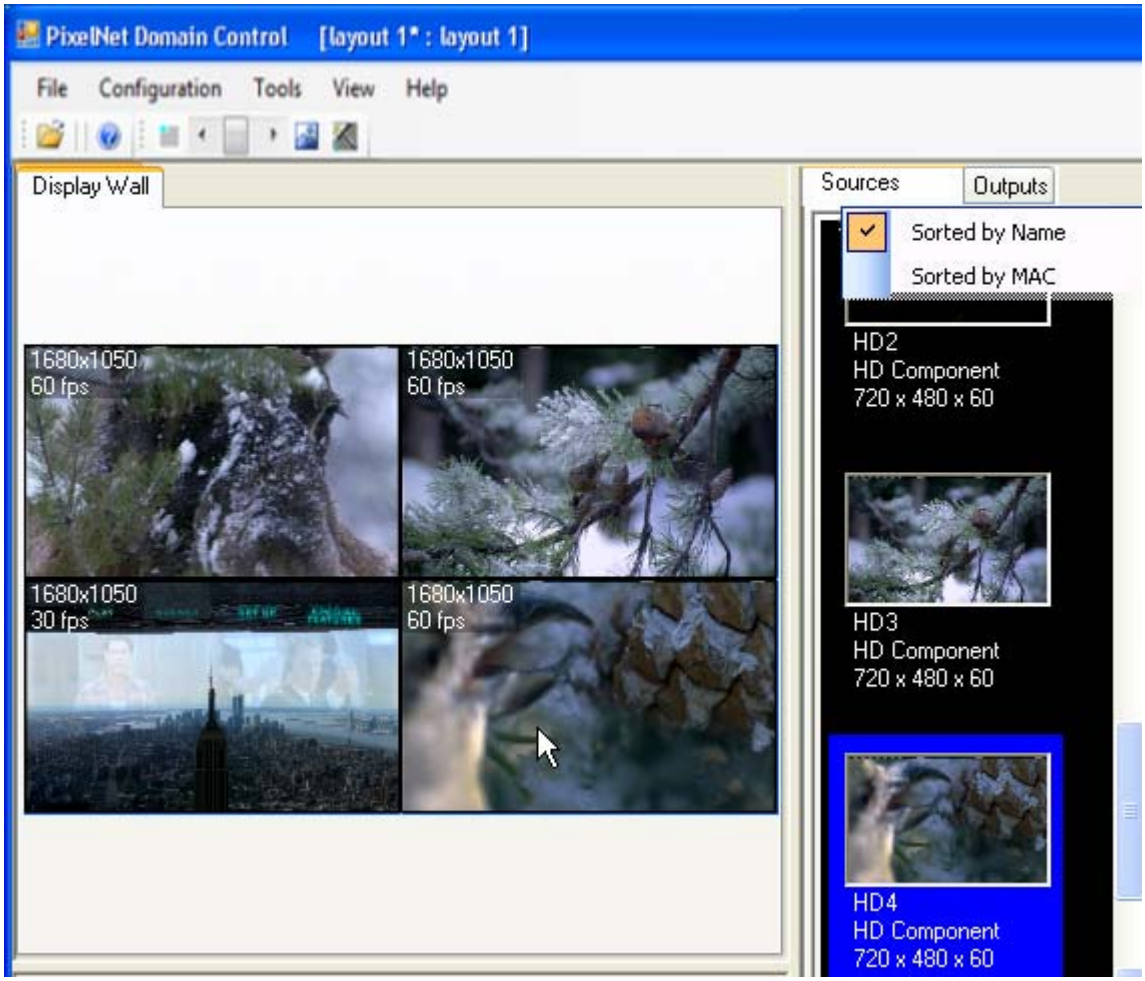


Figure 131 - Sort Options

6.2.5 Displaying a Video Source

Perform the following tasks to display a video source:

1. Select the source icon.
2. Drag and drop it on the display area.
3. Select the window icon on the display wall and drag to position as needed.
4. Grab the size handles of the window icon and size the window as needed.

Dragging a source icon and dropping it onto an existing window will replace the content of the window with the dragged input.

Dragging a source icon on top of another window while holding down the Control (Ctrl) key will open a new window on top of that window (referred as picture-in-picture or PIP).

6.2.6 Displaying an Audio Source

Perform the following tasks to display an audio-capable source:

1. Ensure that the **Audio** menu item is selected under the **View** menu (View-->Audio). Otherwise, the Audio Window will remain hidden.

Note The audio source must have been assigned to the display wall during the phase when output nodes were assigned to displays. **Unassigned audio nodes can not be displayed on the Audio Window.** To assign an audio node after the initial configuration phase, **Edit** (Configuration-->Edit) the current configuration, save, and load it.

2. Select the audio source icon and drag and drop it on the audio window area. Non-audio sources can not be dropped on the audio window; attempting to do so will produce an error icon:

Once an assigned audio node is dropped on the audio window, it will look like **“Figure 132” on page 173**.

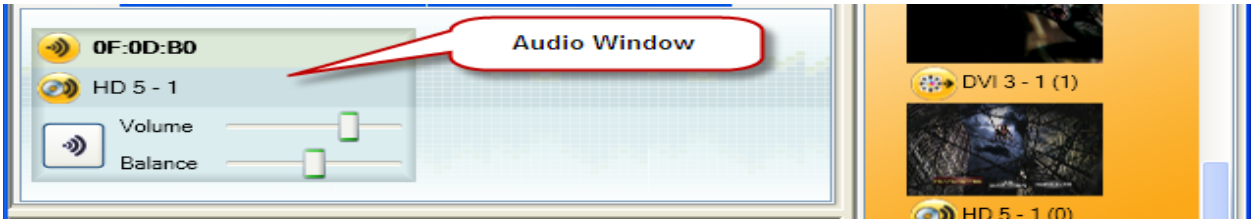


Figure 132 - Displaying Audio Source

6.3 Outputs Tab

Click the **Outputs** tab. The **Outputs** tab shows a list of the configured displays (i.e. 2x2 display wall has 4 displays) as shown below.

Figure 133 - Outputs Tab—Nodes list

6.3.1 Properties

Right-click on an output display to open the **Properties** menu. Double-clicking on a display also opens the **Properties** menu.

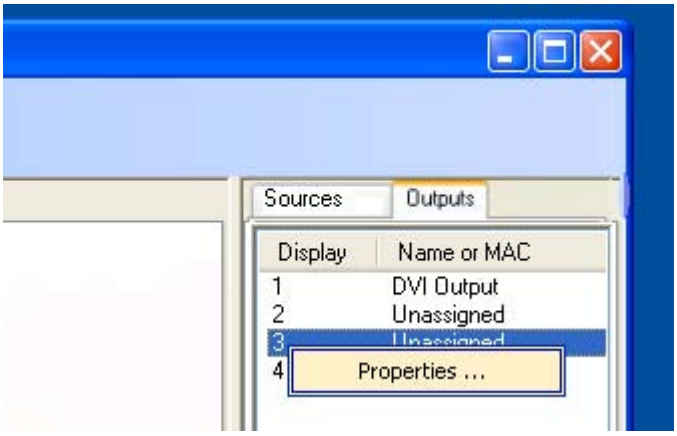


Figure 134 - Output Node—Properties

- **Properties—**This menu item launches the **Output Properties** dialog.

Note When accessed from the **Outputs** tab of the PDC software, the **Output Properties** dialog is read-only. Access the **Output Properties** dialog from the **Display Wall Configuration** tab to make changes. Refer to, **"Output Properties Dialog" on page 63** for more information on setting or changing output Properties.

6.4 PDC File Menu

The PDC File Menu provides the following options:

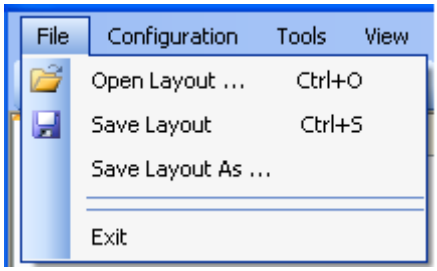


Figure 135 - PDC File Menu Options

Each **File Menu** item opens a standard Windows Open/Save Dialog box.

6.4.1 Open Layout

Opens the layout folder containing all the saved layouts. This folder is saved in the PDC directory by default unless a different directory is designated. For more information on organizing layouts, refer to **"Layouts Tab" on page 192**.

6.4.2 Save Layout

Saves the current window layout of the display wall. This includes size, position, and all other parameters set under the window's properties.

6.4.3 Save Layout As

Saves the current layout under the designated name.

6.5 PDC Configuration Menu

The **Configuration** menu can be accessed from the default PDC dialog during subsequent uses of the PDC after a domain configuration has been saved. The PDC Configuration Menu provides the following options:

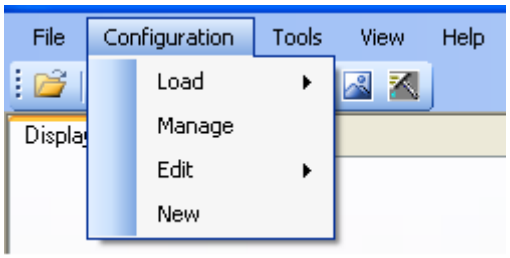


Figure 136 - Configuration Menu

6.5.1 Load

Load launches a sub-menu with different Domain Configuration choices. Selecting a configuration causes PDC to immediately load and use the specified configuration. Loading a configuration changes the output assignments, resolutions, source configurations, as well as, the default layout (if it is selected).

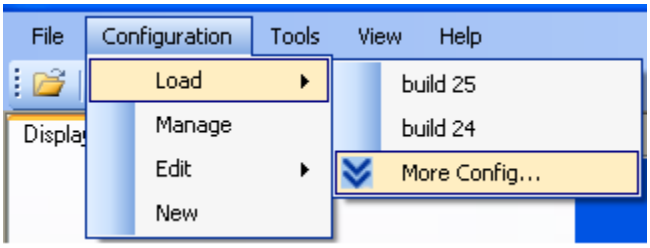


Figure 137 - Load Sub-menu

6.5.1.1 More Configuration Files

Clicking on the double-arrow pointed downwards brings up the following window:

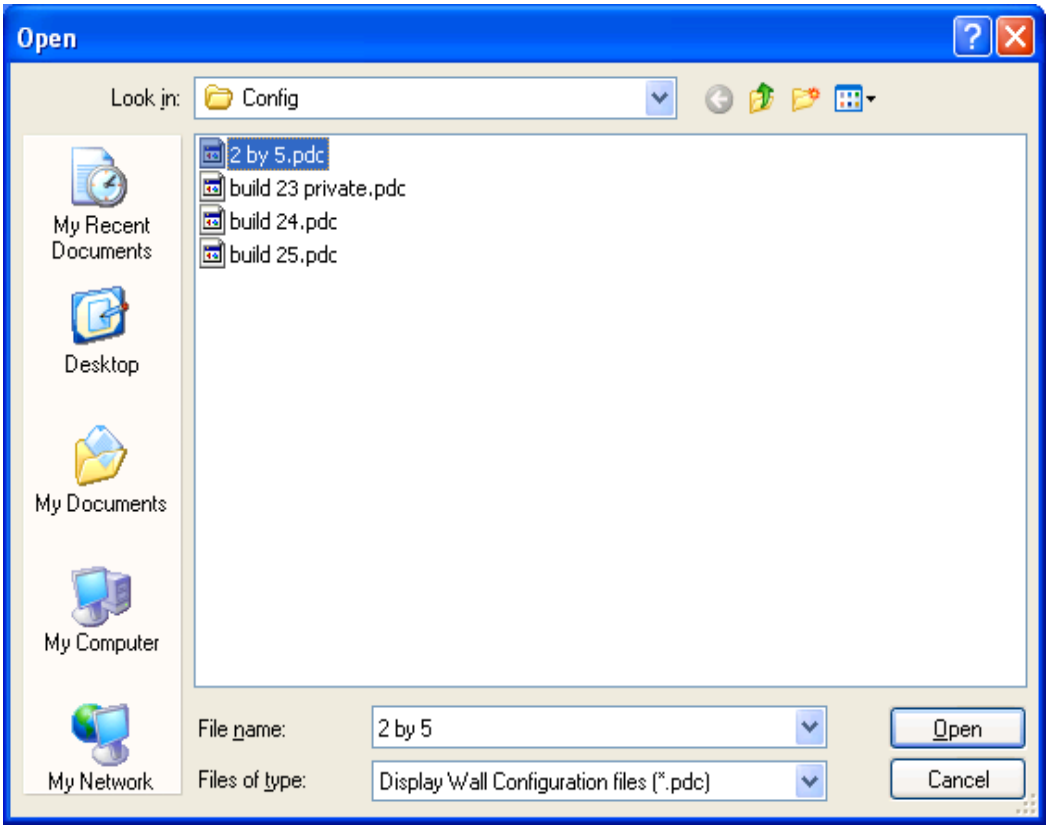


Figure 138 - More Configuration Files

1. Select one of the displayed configuration files from the **Open** dialog.
2. Click **Open**. This closes the dialog and loads the chosen configuration.

6.5.2 Manage

Clicking on **Manage** from the **Configuration** menu launches the **PixelNet Domain Configuration Management** dialog with choices to select the Domain Configuration to be loaded on PDC startup.

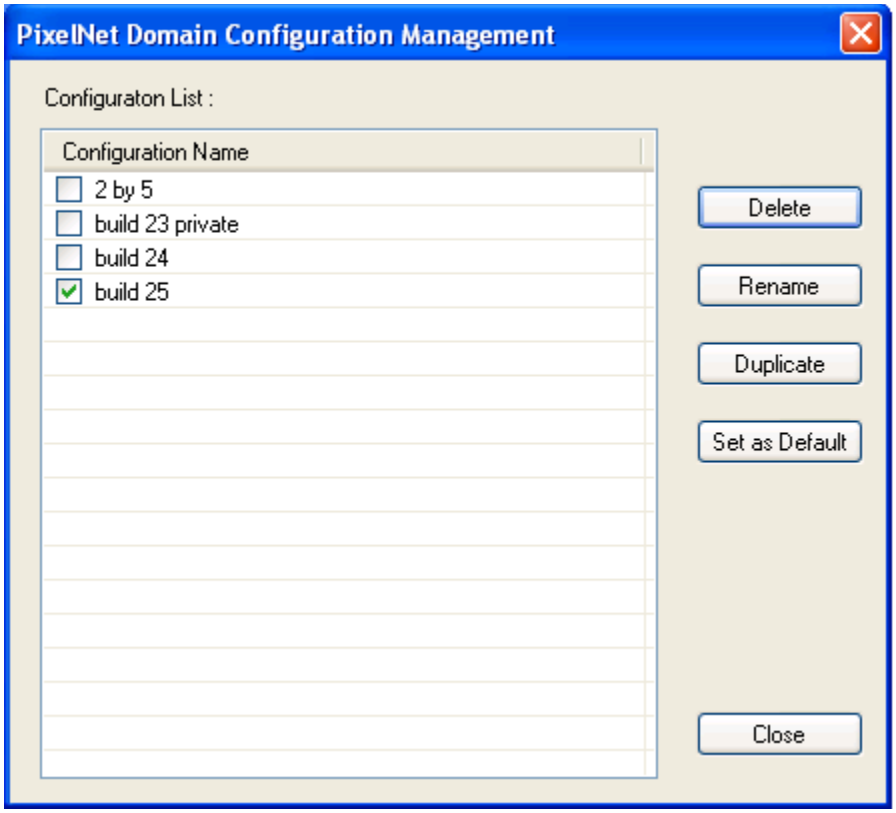


Figure 139 - PixelNet Domain Configuration Management Dialog

This list is the same as the “Load” dialog list, however, the Domain Configuration files can be managed from here. Selecting an item makes the following operations possible:

- **Delete**: Deletes the file from the operating system.
- **Rename**: Highlights the name and allows the option to edit or rename it. This can also be done by double-clicking the name field.

- **Duplicate**: Creates a new file on the operating system with a unique name, using the original file name as the base. For instance, <original name>_copy.
- **Set as Default:** Sets the chosen configuration as the default configuration to apply on every PDC restart.

Keyboard shortcuts *Del, Ctrl-X, Ctrl-D, Ctrl-C,* and *Ctrl-V* are available through the right-click context menu.

Selecting a specific Domain Configuration from the right of the dialog will cause it to load during the next PDC startup.

6.5.3 Edit

Clicking on **Edit** opens the **PixelNet Domain Configuration** dialog displaying the **Domain Connection** tab. Select the **Display Wall Configuration** tab where any configuration aspect can be modified.

6.5.3.1 Editing Output Nodes

The **Display Wall Configuration** tab shown below appears with current node assignments:

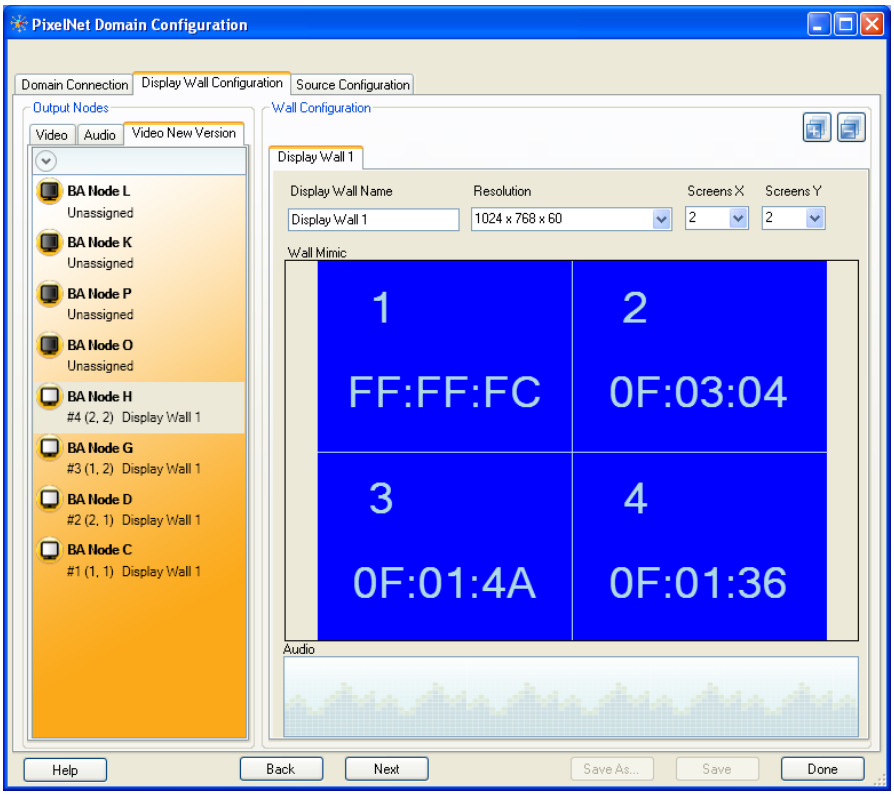


Figure 140 - Display Wall Configuration Tab

Reassigning Output Nodes

Before attempting any edits on the dialog, the following message appears as a warning to save the current layout so that display modifications made until this point are saved.

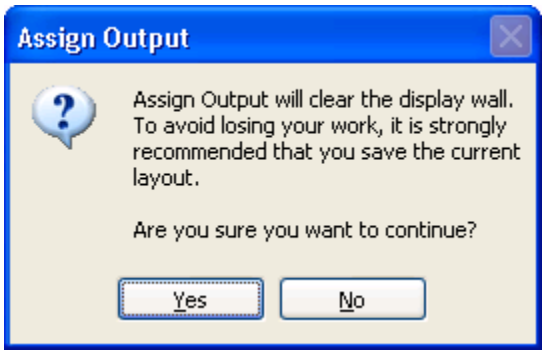

Assign Output
Assign Output will clear the display wall. To avoid losing your work, it is strongly recommended that you save the current layout.
Are you sure you want to continue?
Yes
No

Figure 141 - Assign Output Dialog

- Choose **No** to save the layout before proceeding with assigning output nodes

  or

- Choose **Yes** if the layout has already been saved or to continue assigning the output nodes without saving the layout.

1. To reassign an output node, select the rectangle and right-click to see the options:
   - Unassign
   - Unassign All

2. Select **Unassign** to remove the current node assignment. Selecting **Unassign All** will remove the node assignments of all the nodes on the wall, so use it with caution.
3. Reassigning the nodes follows the same process as assigning them initially. Refer to **"Assigning Nodes to Displays " on page 86** for more information.

6.5.4 New

Choosing **New** will launch the **Domain Configuration** dialog with just the **Domain Connection** tab active. Refer to **"The Domain Connection Tab" on page 52** for more information on how to proceed with this option.

6.6 PDC Tools Menu

The PDC **Tools Menu** provides the following options:

- Reset Nodes
- Update Firmware
- Advanced Settings

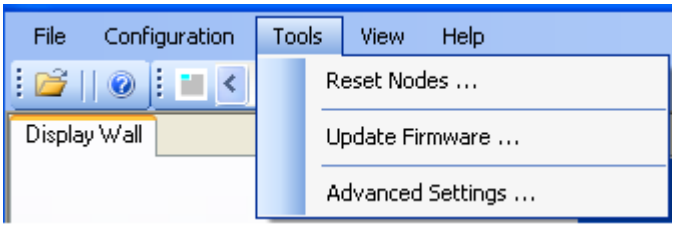


Figure 142 - Tools Menu

6.6.1 Reset Nodes

Selecting this menu item launches the following screen:

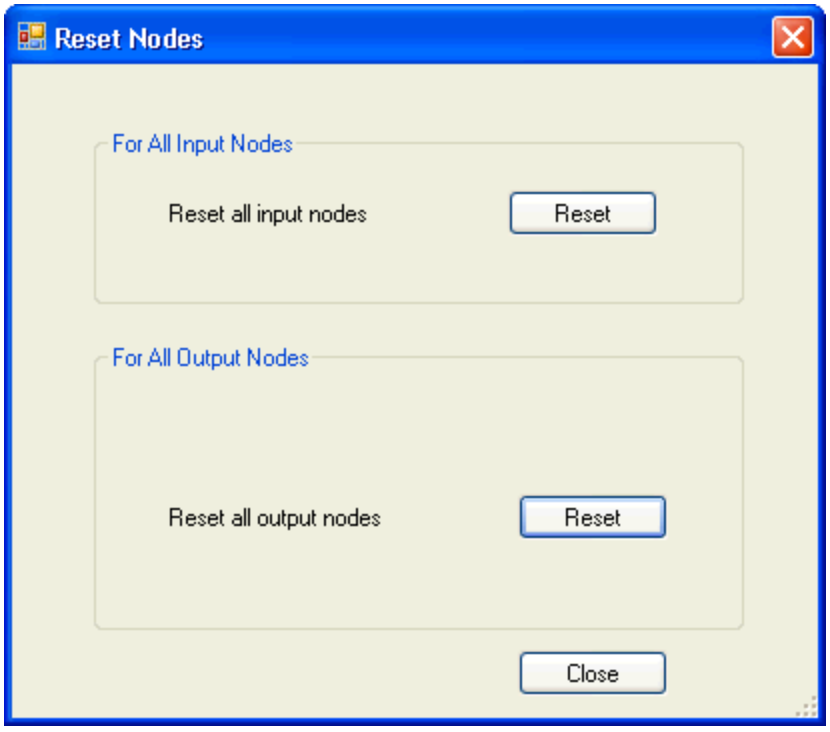


Figure 143 - Reset Nodes

The **Reset Nodes** screen allows to reset all the input or output nodes. By resetting the nodes, none of the node settings will be affected. Reset causes the nodes to stop processing the existing layout. When attempting to reset nodes, a confirmation dialog asks whether the intent is to proceed with the reset.

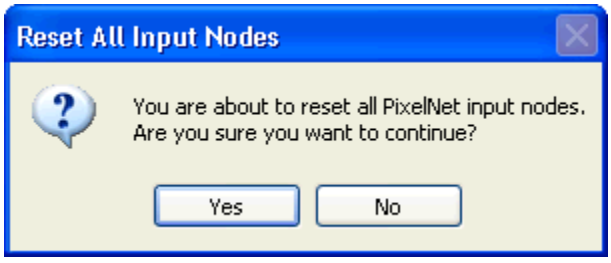


Figure 144 - Reset Confirmation

Note Restart PDC after resetting the nodes.

6.6.2 Update Firmware

This section will describe the steps necessary to update the node firmware.

1. From the **Tools** menu select **Update Firmware** (Tools→Update Firmware). The following dialog appears as a warning to save the layout so that display modifications made until this point are not lost.

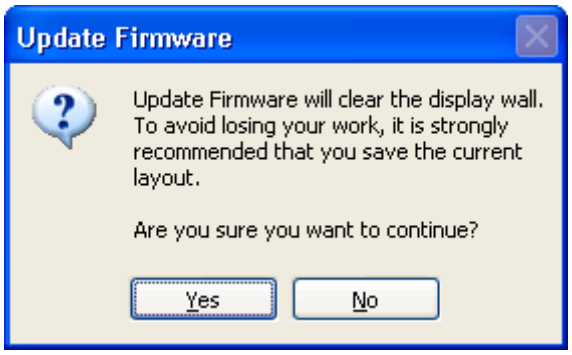

Update Firmware
Update Firmware will clear the display wall. To avoid losing your work, it is strongly recommended that you save the current layout.
Are you sure you want to continue?
Yes
No

Figure 145 - Update Firmware

2. Choose **No** to save the layout before proceeding with updating the firmware.
3. Choose **Yes** to continue updating the firmware without saving the layout (or if the layout has already been saved).

If **Yes** is chosen, the **Update Firmware** Dialog appears as shown below:

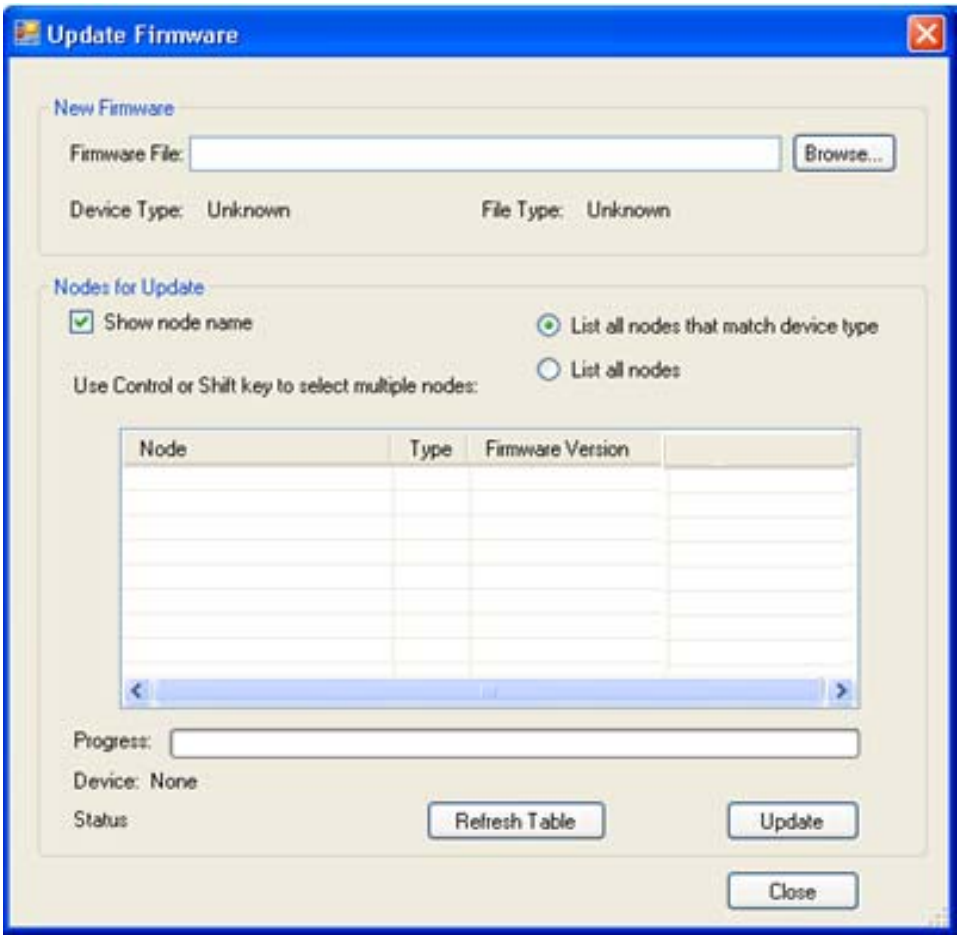


Figure 146 - Update Firmware Dialog

4. In the **Firmware File** field, enter the following path, “C:\\Program Files\Jupiter\PDC\Firmware”, to the desired update file or Browse to the desired file. Each node type will have a firmware file listed.

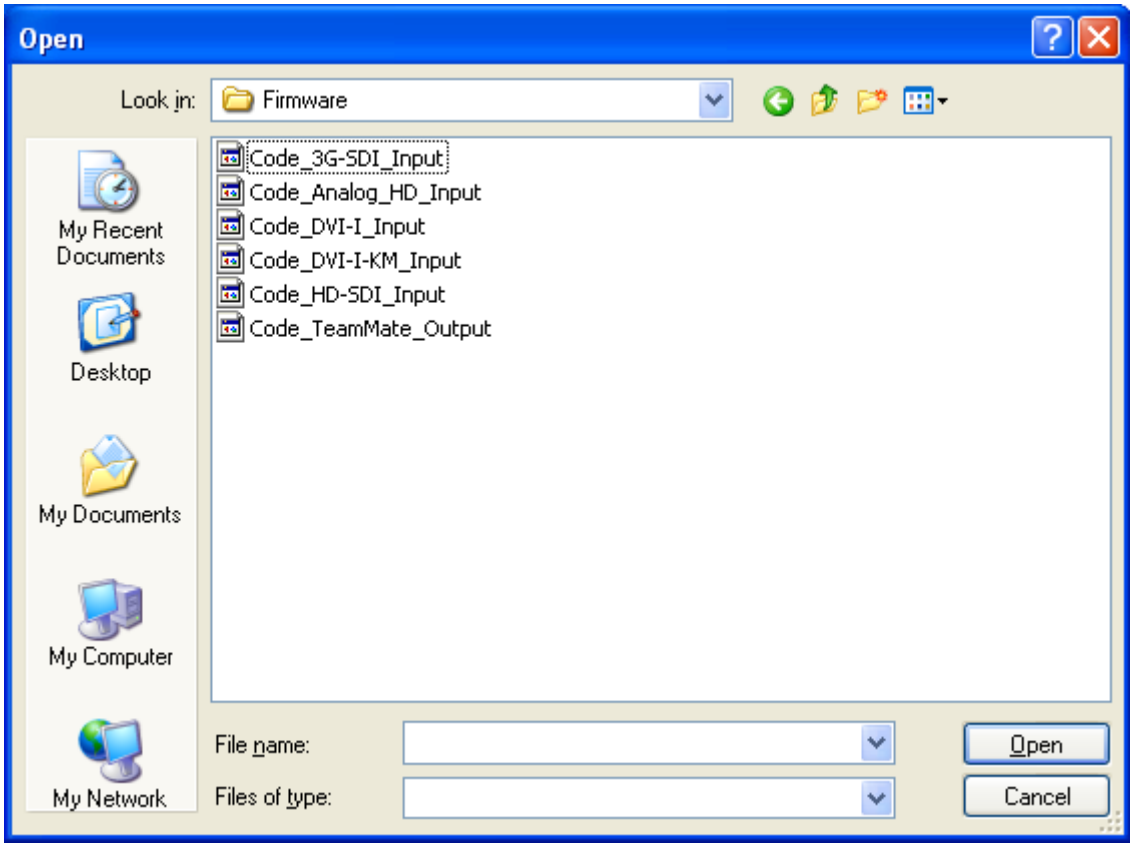


Figure 147 - Access Firmware

5. Select how the nodes will be listed with the following options:
   - **List all nodes that match device type**—This selection lists the nodes that match the type of node file selected in the **Firmware File** field. For example, when updating the DVI input node, this selection will only list the DVI input nodes installed in the system.
   - **List all nodes**—This selection will list all the nodes installed in the system regardless of their type. This option is only used for diagnostic purposes.

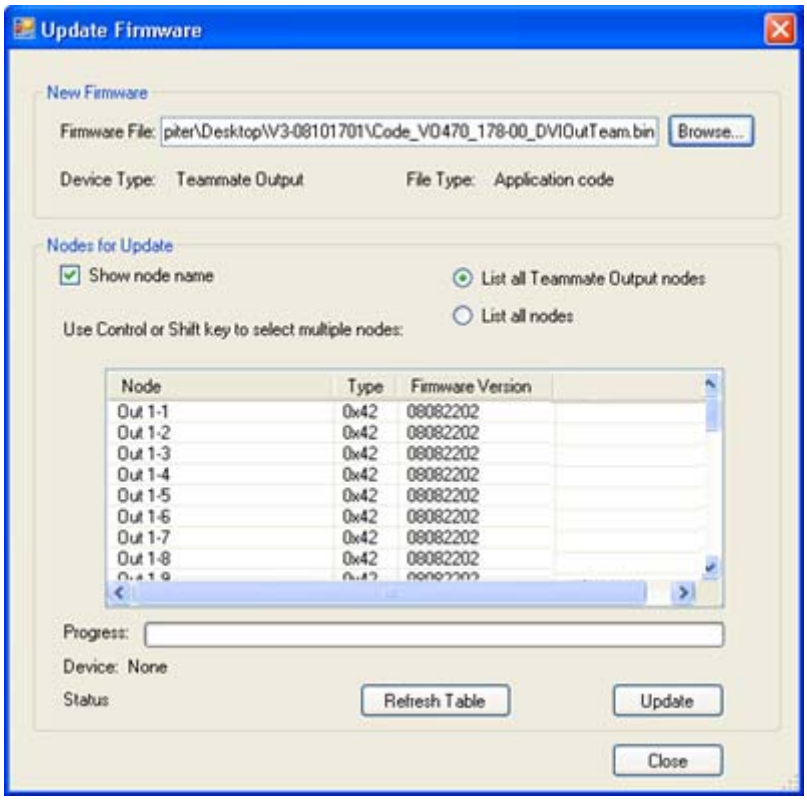


Figure 148 - List Type Matched Nodes

6. Select the nodes to be updated in the **Nodes for Update** section. Select multiple nodes to be updated simultaneously by holding down the *Control* key and clicking on the desired nodes.

   The **Refresh Table** button allows the PDC to find recently added nodes.

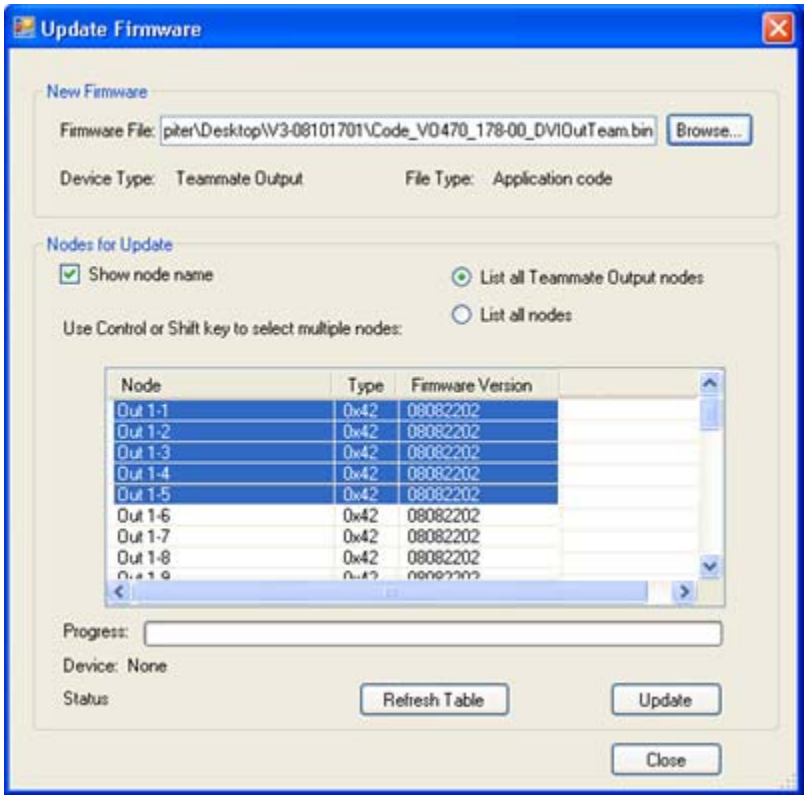


Figure 149 - Selecting Nodes for Update

7. Click on the **Update** button. The update progress will be shown in the progress bar. The type of node being updated and the update status are shown below the bar. When the update is complete, the **Status** section will show “Update Firmware Successful”. If a node fails update, the operation aborts.

   Clicking **Update** without selecting a node, will result in the following message:

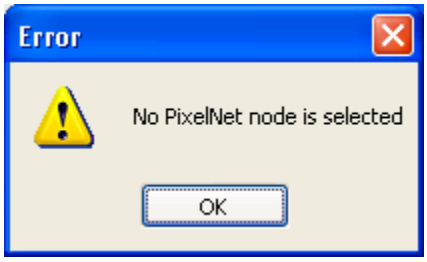


Figure 150 - Error Message

8. After all the nodes have been updated, close and restart the PDC. The system is now ready for normal operation.

6.7 Advanced Settings

The Advanced Settings window holds the current settings for the PDC software. PDC can be customized using the **Advanced Settings** window. From the **Tools** menu, access the **Advanced Settings** menu item (PDC→Tools→Advanced Settings).

The **Advanced Settings** window, shown in **“Figure 151” on page 188**, has the following tabs:

- Display Wall
- Input Nodes
- Configuration
- Layouts
- Network

The following section details how to use each tab in the **Advanced Settings** screen.

6.7.1 Display Wall Tab

The **Display Wall** tab shows the current the display wall geometry and the grid granularity settings used for displays.

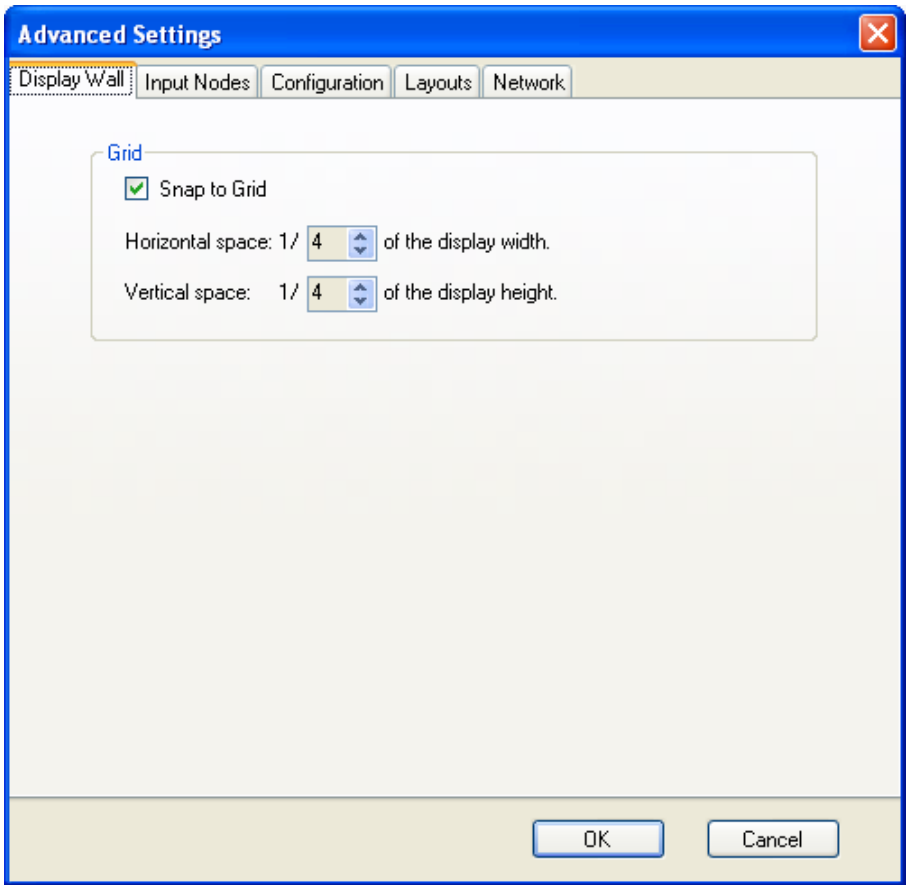


Figure 151 - Display Wall Tab

6.7.1.1 Grid

The **Grid** section allows specifying the positional characteristics of windows on the display wall. Assigning the ratio between the horizontal space and the display width of the output node on the display wall is possible. Similarly, assigning the ratio relationship between the vertical space and the display height of the output node on the display wall is also possible.

If the **Snap to Grid** check box is not selected, the node windows will float freely over the grid. If the **Snap to Grid** check box is checked, windows will be positioned according to the space specifications in the **Horizontal space** and **Vertical space** fields.

6.7.2 Input Nodes Tab

The **Input Nodes** tab shows the current input nodes settings.

6.7.2.1 Default Window Color Space Format

The Default **Color Space** section shows the default color setting for DVI, HD Component, and 3G-SDI input nodes.

- For DVI input nodes, the default setting is RGB-16 bit (5 bit red, 6 bit green, and 5 bit blue color depth levels)
- For HD Component input nodes, the default is RGB-24 bit (8 color depth levels for red, green, and blue).
- For 3G-SDI input nodes, the default is RGB-24 bit (8 color depth levels for red, green, and blue).
- For Quad CVBS-Y/C input nodes, the default is YUV 422 (8 color depth levels for red, green, and blue).

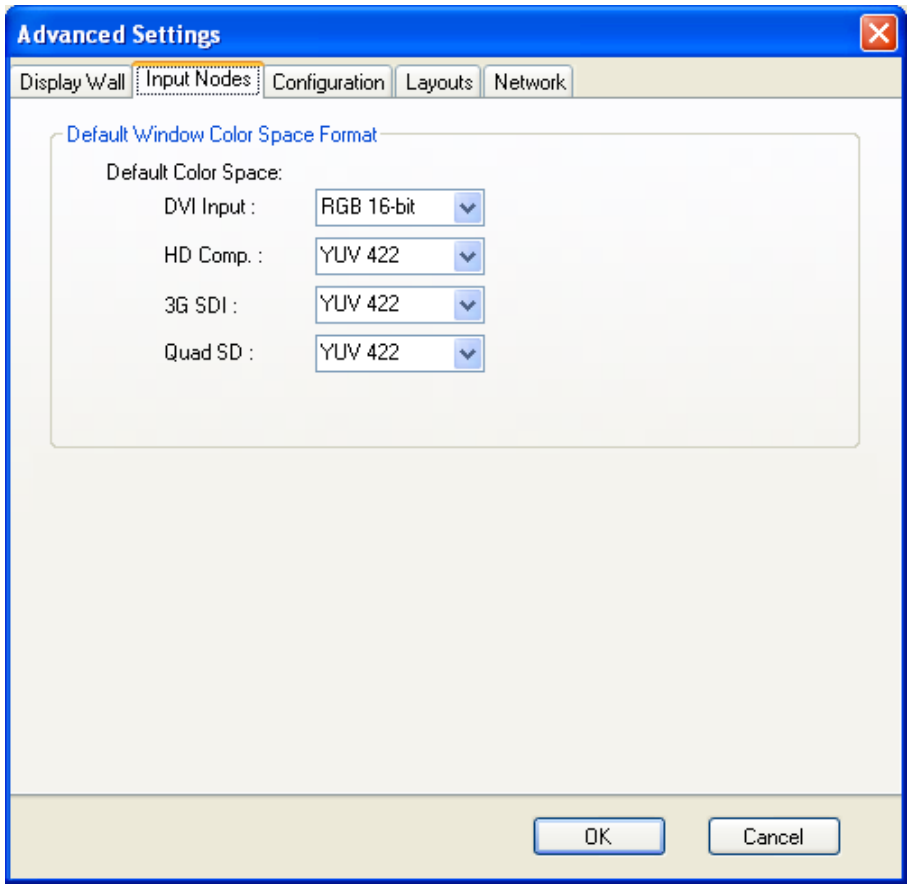


Figure 152 - Input Nodes tab

When opening a new window, the default color depth for that window will be as shown in the figure above. However, a different color depth for a particular window can be selected by using the **Window Properties Dialog**. For more information on Window Properties Dialog, refer to **"Properties" on page 156**.

6.7.3 Configuration Tab

A configuration holds information about the display wall: number of columns and rows, assignment of output nodes, display resolution setting, default data format, and network configuration.

6.7.3.1 Configuration Directory

The **Configuration Directory** allows selecting a path to the default configuration folder. The tab provides two options:

- The **Use Default Directory** option applies the default configuration path to the PDC default configuration directory. This directory can be changed as needed.
- The **Use Customized Directory** option allows setting the current directory to a folder of choice.

The **Number of Configurations in the list** is also displayed.

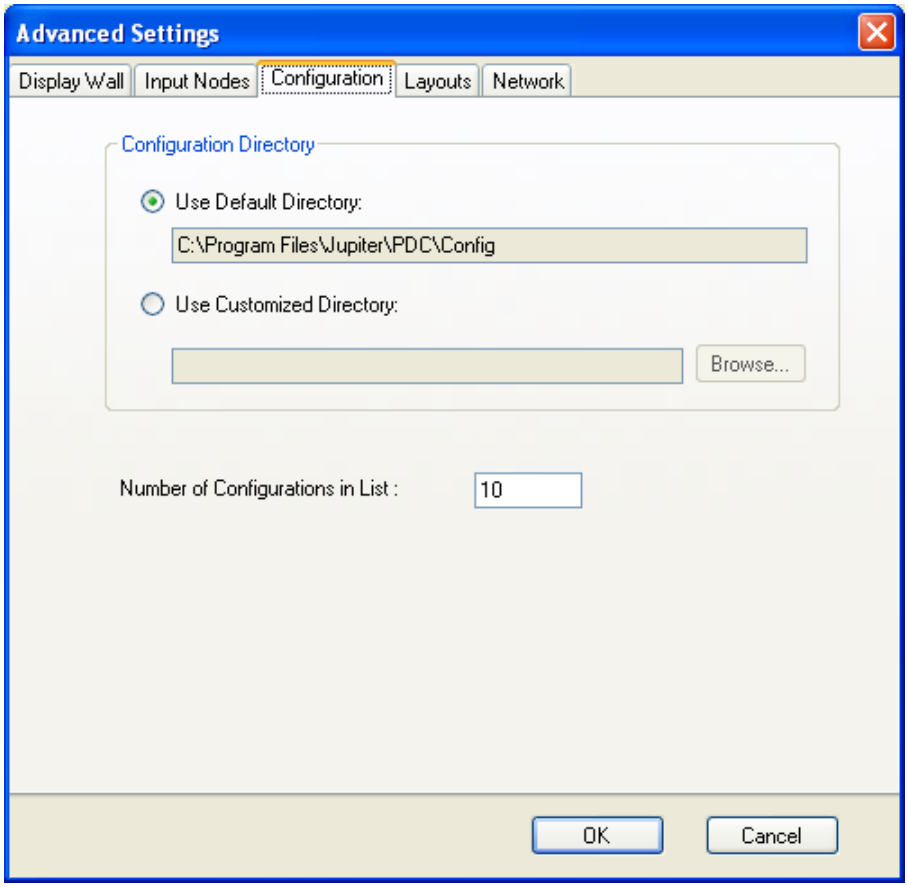


Figure 153 - Configuration Tab

6.7.4 Layouts Tab

A layout is a specific arrangement of windows on the display wall. When a layout is saved, it saves every window's size, position, and other properties associated with the window. When a layout is recalled, all windows will open just as they were saved.

6.7.4.1 Layout Directory

The **Layout Directory** allows selecting a path to the default layout folder. The tab provides two options:

- The **Use Default Directory** option applies the default layout path to the PDC default layout directory. This directory can be changed as needed.
- The **Use Customized Directory** option allows setting the current directory to a folder of choice.

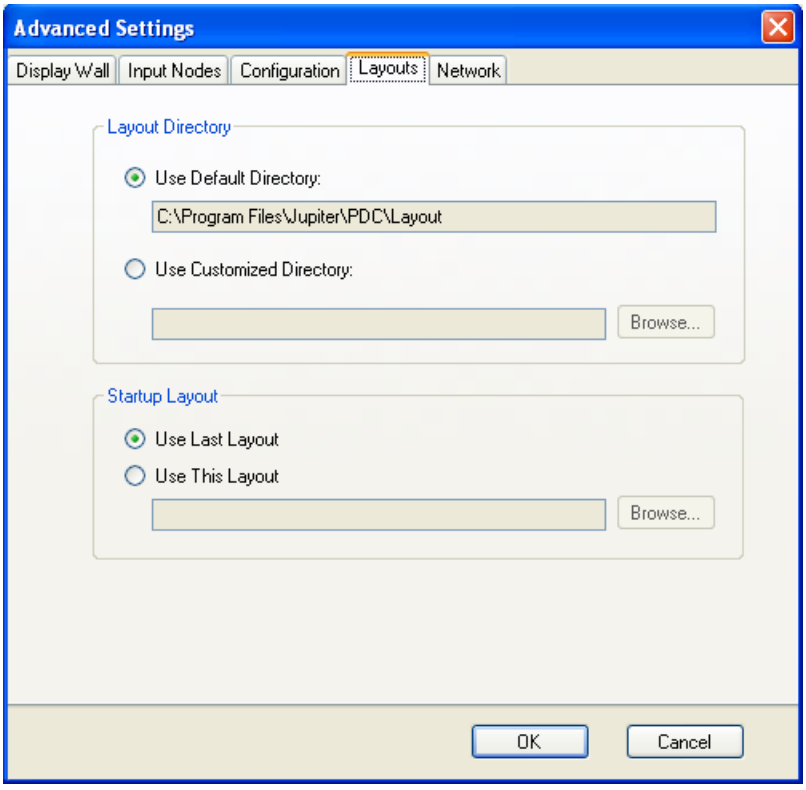


Figure 154 - Layouts Tab

6.7.4.2 Startup Layout

The Startup Layout section of the **Layouts** tab has the following options:

- Select the **Use Last Layout** option to get the same layout as when the system last shut down.
- Select the **Use This Layout** option to get a specific layout to open every time the system starts.

6.7.5 Network Tab

6.7.5.1 Node Monitoring

The **Node Monitoring** section allows to specify the frequency in which the Node Monitor performs its polls. This number is calculated in seconds.

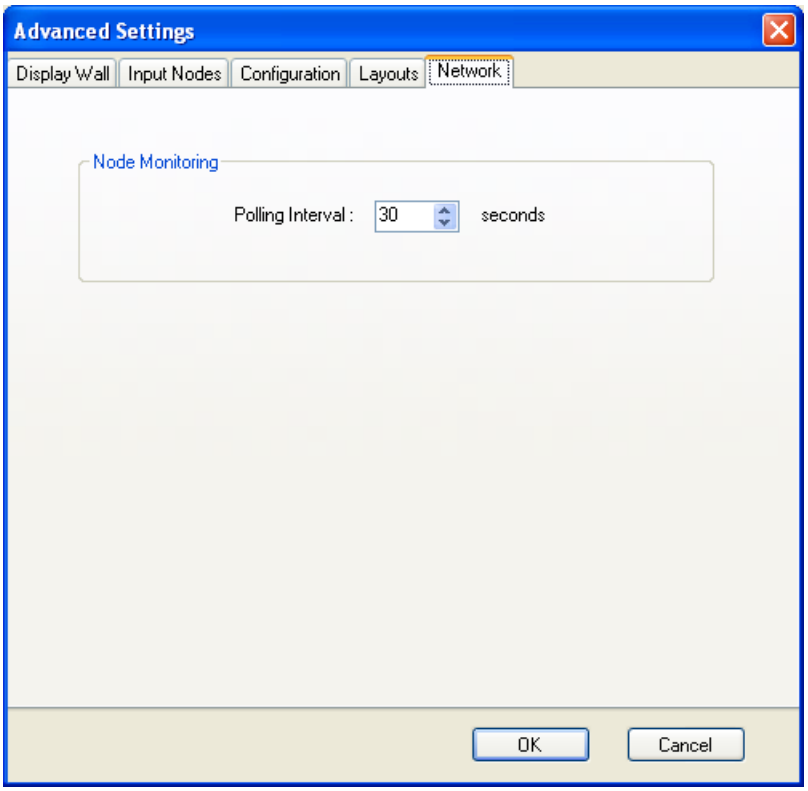


Figure 155 - Network Tab

6.8 PDC View Menu

The PDC View Menu provides the following options:

- Node Monitoring
- Audio

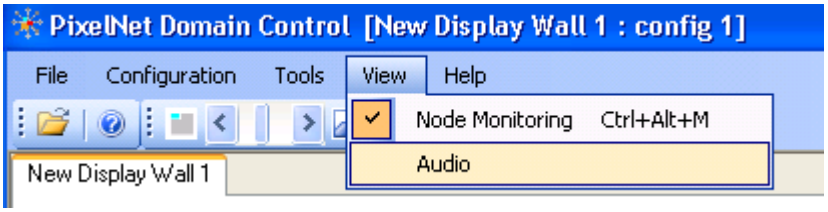


Figure 156 - PDC View Menu

6.8.1 Node Monitoring

The **Node Monitoring** tab displays the operating parameters of the active input and output nodes. If any of these attributes scale above or below programmed limits, the attribute will be highlighted in red.

6.8.1.1 Open Node Monitoring

There are two ways to open the Node Monitoring display:

- Either select the **Node Monitoring** menu item from the **View** Menu as shown in **PDC View Menu** (the figure above).

or

- Use the hotkeys, pressing **Ctrl + Alt + M** simultaneously

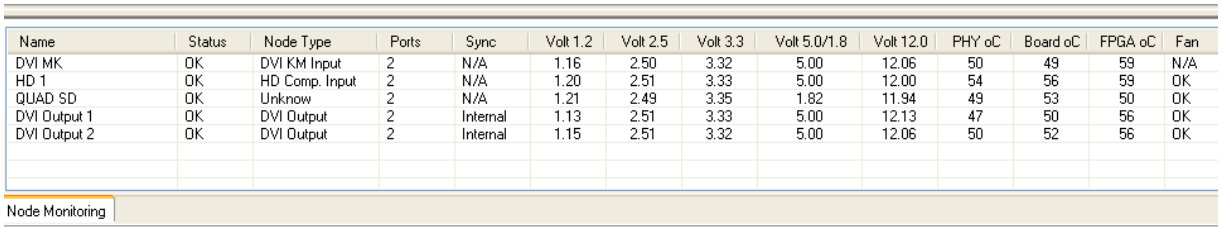

Name Status Node Type Ports Sync Volt 1.2 Volt 2.5 Volt 3.3 Volt 5.0/1.8 Volt 12.0 PHY oC Board oC FPGA oC Fan
DVI MK OK DVI KM Input 2 N/A 1.16 2.50 3.32 5.00 12.06 50 49 59 N/A
HD 1 OK HD Comp. Input 2 N/A 1.20 2.51 3.33 5.00 12.00 54 56 59 OK
QUAD SD OK Unknow 2 N/A 1.21 2.49 3.35 1.82 11.94 49 53 50 OK
DVI Output 1 OK DVI Output 2 Internal 1.13 2.51 3.33 5.00 12.13 47 50 56 OK
DVI Output 2 OK DVI Output 2 Internal 1.15 2.51 3.32 5.00 12.06 50 52 56 OK
Node Monitoring

Figure 157 - Node Monitoring

6.8.2 Audio

Click the **Audio** menu item to make the Audio window appear below the mimic.

6.9 PDC Help Menu

The **PDC Help** menu provides the following options:

- Contents
- About

Figure 158 - PDC Help Menu Options

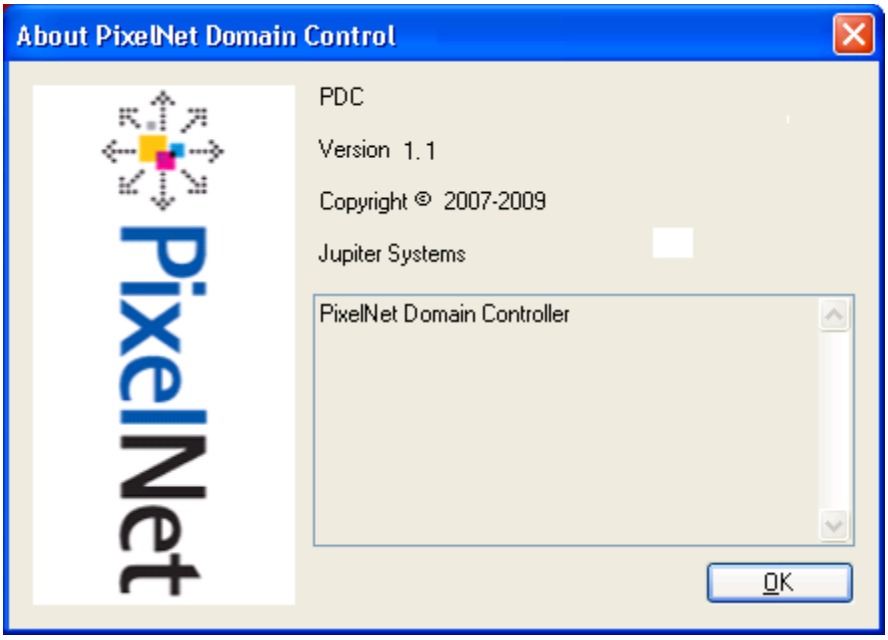


Figure 159 - PDC Help About

- **Contents**—launches the **Web Help** dialog which offers PDC documentation searchable by table of contents. Search and glossary facilities are also availble.
- **About**—launches the **About PixelNet Domain Control** dialog which carries information about the software version.

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Appendix A—PixelNet Node Properties

A. PixelNet Node Properties

While this Appendix attempts to demystify the most commonly seen properties, by no means is this an exhaustive index of Node Properties. Each node contains properties that are a selective list from a larger master list of properties. Depending on the dimensions, parameters, and use, the properties will change on the node. Also, most of the Node Properties are settings that are either used internally by the PixelNet Server or client, or are changeable through another PixelNet client page.

Moreover, the properties and their values change depending on the type of node being used. New properties can be added at any time without notice. In some instances, the same property name has a different context depending on the node. Hence, a definite representation of a specific node's properties is impossible. The following figure shows the video timing parameters and how property values are drawn from the video's projection and placement.

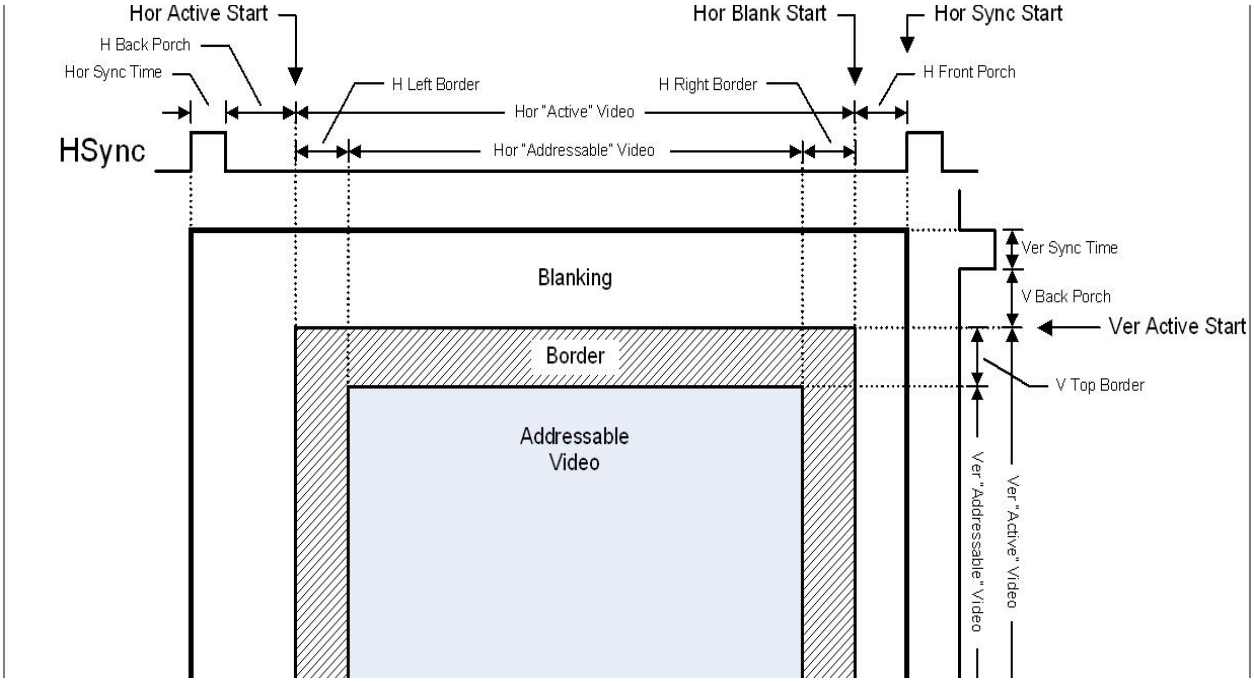

Figure 160 - Video Timing Parameter Definitions

The parameter control page is analogous to the windows Registry editor. It is available on a stock system, but the keys and values are not documented; though very useful on the backend, the end-user has little use for it.

A.1 DVI Output Properties

The current property list for DVI Output is given below.

Table Legend

- **Bolded Rows = Read Only Properties** (these cannot be modified by you)
- Un bolded Rows = Read/Write Properties (these properties can be modified but do not alter them without sufficient guidance from Jupiter Systems)

Table 7: DVI Output Property List

Property	Value	Description
Signal Valid	**0**	**Whether a valid signal exists.**
AutoDetect Enable	1	Auto Detection for output resolutions has been enabled for this node.
Image Width	**640**	**Width of output source image (pixels)**
Image Height	**480**	**Height of output source image (lines)**
HTotal	800	Displays the total horizontal pixels that were charted on the video stream
VTotal	525	Displays the total vertical lines that were charted on the video stream
HActive	640	Displays the active horizontal pixels that were charted on the video stream
VActive	480	Displays the active vertical lines that were charted on the video stream
HBackPorch	40	This denotes the pixel value of the horizontal segment behind the HSync marker
VBackPorch	25	This denotes the line value of the vertical segment behind the VSync marker
Sync Type	0	Recognized Sync Types: H/V and Composite HV. HV=0, Composite HV=2.

Table 7: DVI Output Property List

Property	Value	Description
HSync Polarity	1	A horizontal synchronization pulse is generated whenever the node is scanning a new line. 1=negative polarity, 0=positive polarity.
VSync Polarity	1	A vertical synchronization pulse is generated whenever the node scans a new image from the top of the screen. 1=negative polarity, 0=positive polarity.
HSync Rate	**315000**	**This denotes the line rate (KHz)**
Contrast [Mono]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Red]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Green]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Blue]	100	Level of contrast (Gain). Range is 0 to 200.
VSync Rate	6000	This denotes the frame rate in centi-Hertz
HSync Width	96	Horizontal Sync Pulse (given in pixels)
VSync Width	2	Vertical Sync Pulse (given in lines)
Ext Sync	**0**	**Indicates whether External Sync signal is detected**
Gen Sync	0	Generate Genlock Sync. Signal

A.2 DVI Input Properties

The current property list for DVI Input is given below.

Table Legend

- **Bolded Rows = Read Only Properties** (these cannot be modified by you)
- Un-bolded Rows = Read/Write Properties (these properties can be modified but do not alter them without sufficient guidance from Jupiter Systems)

Table 8: DVI Input Property List

Property	Value	Description
Signal Valid	**1**	**If both analog and digital signals are available, this property chooses which one is used. Analog = 0, Digital = 1**
Preferred Interface	1	Preferred Interface classification where you choose whether the interface is analog or digital. The default value is Digital and the classification for Digital is 1.
AutoDetect Enable	1	Auto Detection for input resolutions has been enabled for this node.
Active Interface	**1**	**Active Interface is either Analog or Digital. This informs which one is being chosen. 0=Analog, 1=Digital.**
Image Width	**1600**	**Width of input source image (pixels)**
Image Height	**1200**	**Height of input source image (lines)**
Phase	0	Phase of sampling analog pixels relative to HSync.
HTotal (Read Only if digital)	**0**	**Displays the total horizontal pixels that were charted on the video stream**
VTotal (Read Only if digital)	**0**	**Displays the total vertical lines that were charted on the video stream**
HActive (Read Only if digital)	**1600**	**Displays the active horizontal pixels that were charted on the video stream**

Table 8: DVI Input Property List

Property	Value	Description
VActive (Read Only if digital)	**1200**	**Displays the active vertical lines that were charted on the video stream**
HBackPorch (Read Only if digital)	**0**	**This denotes the pixel value of the horizontal segment behind the HSync marker**
VBackPorch (Read Only if digital)	**0**	**This denotes the line value of the vertical segment behind the VSync marker**
Sync Type	**0**	**Recognized Sync Types:** **H/V, Sync On Green (SOG), Composite HV.** **Composite HV, H/V=0, SOG=1, and Composite HV=2**
HSync Polarity	**0**	**A horizontal synchronization pulse is detected whenever the node is scanning a new line. 1=negative polarity, 0=positive polarity.**
VSync Polarity	**0**	**A vertical synchronization pulse is detected whenever the node scans a new image from the top of the screen. 1=negative polarity, 0=positive polarity.**
HSync Rate	**19073**	**This denotes the Frame rate in kHz**
VSync Rate	**6002**	**This denotes the Frame rate in centiHertz**
Brightness	0	Level of brightness—All (Offset). Range is -100 to 100.
Brightness [Red]	0	Level of brightness in Red (Offset). Range is -100 to 100.
Brightness [Green]	0	Level of brightness in Green (Offset). Range is -100 to 100.
Brightness [Blue]	0	Level of brightness in Blue (Offset). Range is -100 to 100.
Contrast [Mono]	100	Level of contrast—All (Gain). Range is 0 to 200.
Contrast [Red]	100	Level of contrast (Gain). Range is 0 to 200.

DVI Input Properties

Table 8: DVI Input Property List

Property	Value	Description
Contrast [Green]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Blue]	100	Level of contrast (Gain). Range is 0 to 200.
HSync Width	**0**	**Horizontal Sync Pulse (pixels)**
VSync Width	**0**	**Vertical Sync Pulse (lines)**
Auto-Phase	1	Finds pixel centers (applies only to analog)
Auto-DE	0	Attempts to auto-discover active region (applies only to analog)
Interlaced	0	Denotes whether the signal is interlaced. 0=No, 1=Yes.
Freeze Capture	0	Cause freeze frame on all streams by disabling capture. 0=Off, 1=On.

A.3 HD Component Properties

The current property list for HD Component Input is given below. able Legend

- **Bolded Rows = Read Only Properties** (these cannot be modified by you)
- Un bolded Rows = Read/Write Properties (these properties can be modified but do not alter them without sufficient guidance from Jupiter Systems)

Table 9: HD Component Property List

Property	Value	Description
Signal Valid	**1**	**States whether a valid signal exists.**
Auto Detect Enable	**1**	**Performs Auto Detection**
Image Width	**1280**	**Width of input source image (pixels)**
Image Height	**720**	**Height of input source image (lines)**
Phase	174	Phase of sampling pixels relative to HSync.
HTotal	**1650**	**Displays the total horizontal pixels that were charted on the video stream**
VTotal	**750**	**Displays the total vertical lines that were charted on the video stream**
HActive	**1280**	**Displays the active horizontal pixels that were charted on the video stream**
VActive	**720**	**Displays the active vertical lines that were charted on the video stream**
HBackPorch	**260**	**This denotes the pixel value of the horizontal segment behind the HSync marker**
VBackPorch	**25**	**This denotes the line value of the vertical segment behind the VSync marker**
HSync Rate	**4495312**	**This denotes the Frame rate in KHz**
VSync Rate	**5993**	**This denotes the Frame rate in centihertz**

HD Component Properties

Table 9: HD Component Property List

Property	Value	Description
Brightness [Mono]	0	Level of brightness—All (Offset). Range is -100 to 100.
Brightness [Red]	0	Level of brightness in Red (Offset). Range is -100 to 100.
Brightness [Green]	0	Level of brightness in Green (Offset). Range is -100 to 100.
Brightness [Blue]	0	Level of brightness in Blue (Offset). Range is -100 to 100.
Contrast [Mono]	100	Level of contrast—All (Gain). Range is 0 to 200.
Contrast [Red]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Green]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Blue]	100	Level of contrast (Gain). Range is 0 to 200.
Adaptive Contrast Enhance-ment	0	Adaptive Contrast Enhancement set-ting. Range is 0 to 15.
Detail Enhancement Level	127	Detail Enhancement Level setting. Range is 0 to 255.
Detail Enhancement Noise Threshold	127	DE Noise Threshold Level setting. Range is 0 to 255.
Edge Sharpness Overshoot	127	Edge Sharpness Overshoot level set-ting. Range is 0 to 255.
HSync Width	**403**	**Horizontal Sync Pulse (pixels)**
VSync Width	**5**	**Vertical Sync Pulse (lines)**
Auto-Phase	1	Perform auto-phase detection
Interlaced	**0**	**Denotes whether the signal is interlaced. 0=No, 1=Yes.**
Freeze Capture	0	Cause freeze frame on all streams by disabling capture. 0=Off, 1=On.
Interleaving	**1**	**Interleaving capable node. 0=No, 1=Yes.**
Channel Count	**1**	**Number of channels supported**
Max Windows	**2**	**Maximum possible windows**
1440 Mode	0	0=disabled horizontal scaling, 1=enabled horizontal scaling.
General Noise Reduction	31	Range is 0 to 63.
Block Artifact Reduction	31	Range is 0 to 63.
Mosquito Noise Reduction	31	Range is 0 to 63.

A.4 3G-SDI Input Properties

The current property list for 3G-SDI Input is given below. able Legend

- **Bolded Rows = Read Only Properties** (these cannot be modified by you)
- Un bolded Rows = Read/Write Properties (these properties can be modified but do not alter them without sufficient guidance from Jupiter Systems)

Table 10: 3G-SDI Property List

Property	Value	Description
Signal Valid	**1**	**States whether a valid signal exists.**
Auto Detect Enable	**1**	**Performs Auto Detection**
Image Width	**1280**	**Width of input source image (pixels)**
Image Height	**720**	**Height of input source image (lines)**
HTotal	**2000**	**Displays the total horizontal pixels that were charted on the video stream**
VTotal	**900**	**Displays the total vertical lines that were charted on the video stream**
HActive	**1200**	**Displays the active horizontal pixels that were charted on the video stream**
VActive	**700**	**Displays the active vertical lines that were charted on the video stream**
HBackPorch	**400**	**This denotes the pixel value of the horizontal segment behind the HSync marker**
VBackPorch	**70**	**This denotes the line value of the vertical segment behind the VSync marker**
HSync Rate	**0**	**This denotes the Frame rate in kHz**
VSync Rate	**0**	**This denotes the Frame rate in centiHertz**
Brightness [Mono]	0	Level of brightness—All (Offset). Range is -100 to 100.

3G-SDI Input Properties

Table 10: 3G-SDI Property List

Property	Value	Description
Brightness [Red]	0	Level of brightness in Red (Offset). Range is -100 to 100.
Brightness [Green]	0	Level of brightness in Green (Offset). Range is -100 to 100.
Brightness [Blue]	0	Level of brightness in Blue (Offset). Range is -100 to 100.
Contrast [Mono]	100	Level of contrast—All (Gain). Range is 0 to 200.
Contrast [Red]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Green]	100	Level of contrast (Gain). Range is 0 to 200.
Contrast [Blue]	100	Level of contrast (Gain). Range is 0 to 200.
HSync Width	**200**	**Horizontal Sync Pulse (pixels)**
VSync Width	**3**	**Vertical Sync Pulse (lines)**
Auto-DE	0	Perform automatic data enabling
Interlaced	**0**	**Denotes whether the signal is interlaced. 0=No, 1=Yes.**
Adaptive Contrast Enhance-ment	0	Adaptive Contrast Enhancement set-ting. Range is 0 to 15.
Detail Enhancement Level	127	Detail Enhancement Level setting. Range is 0 to 255.
Detail Enhancement Noise Threshold	127	DE Noise Threshold Level setting. Range is 0 to 255.
Edge Sharpness Overshoot	127	Edge Sharpness Overshoot level set-ting. Range is 0 to 255.
1440 Mode	0	0=disabled horizontal scaling, 1=enabled horizontal scaling.
General Noise Reduction	31	Range is 0 to 63.
Block Artifact Reduction	31	Range is 0 to 63.
Mosquito Noise Reduction	31	Range is 0 to 63.
Freeze Capture	0	Cause freeze frame on all windows by disabling capture

A.5 Quad CVBS-Y/C Input Properties

The current property list for Quad CVBS-Y/C Input is given below. able Legend

- **Bolded Rows = Read Only Properties** (these cannot be modified by you)
- Un bolded Rows = Read/Write Properties (these properties can be modified but do not alter them without sufficient guidance from Jupiter Systems)

Table 11: Quad CVBS-Y/C Property List

Property	Value	Description
Signal Valid	**1**	**States whether a valid signal exists.**
Auto Detect Enable	**1**	**Performs Auto Detection**
Image Width	**1280**	**Width of input source image (pixels)**
Image Height	**740**	**Height of input source image (lines)**
HTotal	**1800**	**Displays the total horizontal pixels that were charted on the video stream**
VTotal	**800**	**Displays the total vertical lines that were charted on the video stream**
HActive	**1100**	**Displays the active horizontal pixels that were charted on the video stream**
VActive	**650**	**Displays the active vertical lines that were charted on the video stream**
HBackPorch	**300**	**This denotes the pixel value of the horizontal segment behind the HSync marker**
VBackPorch	**60**	**This denotes the line value of the vertical segment behind the VSync marker**
HSync Rate	**0**	**This denotes the Frame rate in kHz**
VSync Rate	**0**	**This denotes the Frame rate in centiHertz**
HSync Width	**200**	**Horizontal Sync Pulse (pixels)**
VSync Width	**3**	**Vertical Sync Pulse (lines)**

Quad CVBS-Y/C Input Properties

Table 11: Quad CVBS-Y/C Property List

Property	Value	Description
Interlaced	**0**	**Denotes whether the signal is interlaced. 0=No, 1=Yes.**
Contrast [Mono]	100	Contrast (Mono). Level of contrast—All (Gain). Range is 0 to 200.
Saturation	150	Saturation. Range is 0 to 200.
Hue	160	Hue. Range is -180 to 180.
Brightness	100	Brightness. Range is -100 to 100.
Interleaving	1	Interleaving capable node. 0=No, 1=Yes.
Freeze Capture	0	Cause freeze frame on all streams by disabling capture. 0=Off, 1=On.
Video Std	1	Video standard expected on this input (NTSC-M, PAL-BDHI, etc.) 0 = NTSC; 1 = NTSC-M; 2 = NTSC-M-JP; 3 = NTSC-M-KR; 4 = PAL; 5 = PAL-BG; 6 = PAL-H; 7 = PAL-I.
Comb Filter	0	Option to use comb filter

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Appendix B—Technical Support

B. Technical Support

B.1 First Line Help

If you have difficulty installing or using any of the PDC software components, please contact your dealer for assistance as your first line of help.

B.2 Web Site

Note that Jupiter Systems maintains an extensive web site for assisting you with problems you may have with installation and use of your Jupiter Display Controller. The Jupiter Systems web site is available 24 hours a day and 7 days a week for your convenience. As a new owner of a Jupiter Systems controller (or if you have a support contract), you will be entitled to access the protected area of the web site. If you were not issued a password with your system (or contract), please fill out the Password Request form online. The Jupiter Systems' web site can be found at **www.jupiter.com**. Click the Support tab at the bottom of the opening page to go to the Technical Support pages.

B.3 E-Mail

For convenience, our web site includes an e-mail form to report any problem that may appear. We recommend that all our customers, but especially our international customers, use the e-mail form to avoid the inconvenient time differences as well as expensive telephone charges.

B.4 Phone Support

Jupiter Systems maintains a support staff to help with the installation or operational difficulties. Support is available Monday through Friday except national holidays. Please refer to our web site (Contacting Support) for more up to date information and how to contact our support staff. To avoid delays and provide the best support possible, we recommend contacting your dealer and use our web site or use e-mail before contacting Jupiter Systems Support staff directly.

B.5 Software Updates

Please refer to the dealer or OEM or their respective web sites for information on receiving software updates. All software updates must be made through the dealer.

B.6 Documentation

All printed documentation (manuals, technical bulletins, and application notes) is included on the PDC CD as .pdf files in a folder labeled Setup\program files\PDC\Manuals. Manuals are also installed on your system. You can easily download and view these documents from the PDC CD by opening the CD from My Computer and double clicking on the Manuals folder.

The latest versions of all documents are on our web site.

Appendix C—Return Merchandise Authorizations (RMA)

C. Return Merchandise Authorizations (RMA)

This section details the RMA procedures, policy, and formalities.

C.1 Return Merchandise Authorization (RMA) Policy

If you wish to return any product for repair or replacement you MUST get an RMA number from Jupiter Systems BEFORE returning the product to us. In order to get an RMA number, you MUST speak to (or e-mail) a Tech Support person. The only person who can authorize an RMA is a Tech Support Representative.

Do NOT send products of any kind to Jupiter Systems – if they do not have a RMA number plainly displayed on the outside of the package they will be refused by the receiving department and returned. When receiving the RMA number, it is recommended that printing the page received in the e-mail (see Return Merchandise Authorization (RMA) Instructions) below. This instruction page contains a shipping label with the RMA number on it, cut this label out and use it. All instructions for returning your product are on this page.

Often, we find that the wall controller is not really defective and the problem will be found in the installation setup. Please check our web site (www.jupiter.com) for the latest installation, software update, setup, and troubleshooting information for your wall controller.

If your system is no longer covered by a warranty, you will need to supply a credit card number or Purchase Order Number to cover repairs. We must have the PO# or credit card number BEFORE we issue an RMA.

Contacting Jupiter Systems Tech Support can be done in several ways:
Phone: 510-675-1007
Fax: 510-675-1001

- **E-mail** – support@jupiter.comUT

C.2 Shipping Policy

In all cases the Customer must obtain an RMA number from Jupiter Systems and ship the unit or board to Jupiter Systems freight prepaid with the RMA number clearly indicated on the shipping label and on the waybill. Shipments that arrive without an RMA number will be refused and returned to the Customer at Customer's expense.

Proper packaging must be used on all return shipments. Customer is liable for any damage incurred in transit and will be charged if new shipping materials are required for return shipment.

C.2.1 Domestic

- Customer ships unit or board to Jupiter freight prepaid.
- Jupiter returns the unit or board to Customer according to Customer's shipping instructions. Freight is prepaid and added to bill.

C.2.2 International

- Customer ships unit or board to Jupiter freight prepaid.
- Jupiter returns the unit or board to Customer freight collect according to Customer's shipping instructions.
- On ALL international returns, Customer is responsible for any duties, broker's fees, or freight charges assessed to Jupiter Systems.
- All international returns must be marked:

U.S. manufactured goods being returned for repair.

Foreign shipments should include our Customs Broker on all shipping documents:

RF International, Ltd.
Phone: 650-697-8150
Fax: 650-697-8105

All returns should be shipped freight prepaid. Any customs charges incurred by Jupiter on in-bound non-warranty shipments will be added to the repair charges. All systems are shipped back to the customer freight collect. Customer pays all customs charges incurred by using their own Customs Broker.

C.3 Return Merchandise Authorization (RMA) Instructions

1. Make sure the product is securely and safely packaged or in its original packaging.
2. Place a letter using your letterhead inside the package describing the problem with the product and your PO# or credit card number, (or letter of credit for international customers). There are three reasons for this:
   - We have an address and contact that we can keep with the unit and a method of contacting you if we have questions.
   - You give us some help in determining how to repair the product with the description.
   - There is an address on the inside of the box if the external address is destroyed in shipping.
   - Make sure you have adequate insurance on the product to cover its value before shipping.
3. Make sure that the RMA number is plainly visible on the outside of the package you are sending. Receiving will refuse any packages without RMA numbers visible on the outside of the package.

Note Please print this page, cut out and use the mailing label supplied in the next page with the RMA number pre-printed for you in the space provided.

C—Return Merchandise Authorizations (RMA)

Jupiter Systems

31015 Huntwood Avenue

Hayward, CA 94544-7007

USA

RMA # _____

Glossary

Glossary

A

A	Amp(s)
AC	Alternating current
ATSC	Advanced Television Systems Committee whose proposed format will replace the analog NTSC television system

B

BNC	A bayonet type of twist lock connector

C

C	Centigrade
Carrier Detect Signal	Indicating an operational Ethernet hardware interface
Cat 6	Short for Category 6 (gigabit Ethernet), network cabling that is most commonly used for 1 Gbit/s networks such as 1000Base-TX Ethernet

Glossary

COM	Component Object Model is a platform-independent, distributed, object-oriented system for creating binary software components that can interact
Composite Video	Video signal combined into a single signal (wire)
CPU	Central Processing Unit
Chrominance	The part of an S-Video signal that carries the color information

D

DA	A Distribution Amplifier can distribute a single input signal to multiple outputs without ground loops or signal degradation
Daisy-chain	Plugging unit B into unit A, and unit C into unit B, etc.
Display	Device that accepts and makes visible the output from a computer (monitor, flat panel, projector, etc.)
DVI	Digital Visual Interface

E

EDID	Extended Display Identification Data is used to detect information about what the system supports regarding preferred resolution and color depth

F

F	Fahrenheit
fps	frames per second
ft	feet/foot

G

Graphics	The output from a graphics board to a monitor – what one sees as computer output on a monitor

Glossary

H

HD	High Definition
Hz	Hertz

I

I/O	Input/output
IP	Internet Protocol
IPG	Inter-packet gap

L

LAN	Local Area Network
LED	Light Emitting Diode
Luminance	The part of an S-Video signal that carries the picture information

M

MAC address	Media Access Control address is a unique identifier assigned to network devices (adapters, NICs, etc.)
MB	Megabyte
Mb	Megabit
Mbps	Megabits per second
MTBF	Mean Time Between Failure
MHz	Megahertz
mm	Millimeter

N

NTSC — National Television System Committee is the analog television system used in the United States, Canada, Japan, Mexico, the Philippines, South Korea, Taiwan, and other countries

P

Packet — Formatted block of data carried by a computer network

PAL — Phase Alternating Line is a color-encoding system used in broadcast television systems throughout the world

PDC — PixelNet Domain Control

PROM — Programmable read-only memory

R

RGB — Red, Green, Blue

RMA — Return Merchandise Authorization

S

SDTV — Standard-definition television refers to television systems that have a resolution that meets standards; namely, digital television with resolutions similar to analog systems

SECAM — Sequential Color with Memory is an analog color television system

S-Video — Separated Video (chrominance and Luminance)

U

UTP — Unshielded Twisted Pair network cabling

V

Video	The output from an NTSC (or PAL) LiveVideo source
VAC	Volts AC
VGA	Video Graphics Adapter

W

W	Watt(s)

Y

YPrPb	YPrPb is the analog video signal carried by component video cables in consumer electronics. The green cable carries Y, the red cable carries Pr, and the blue cable carries Pb

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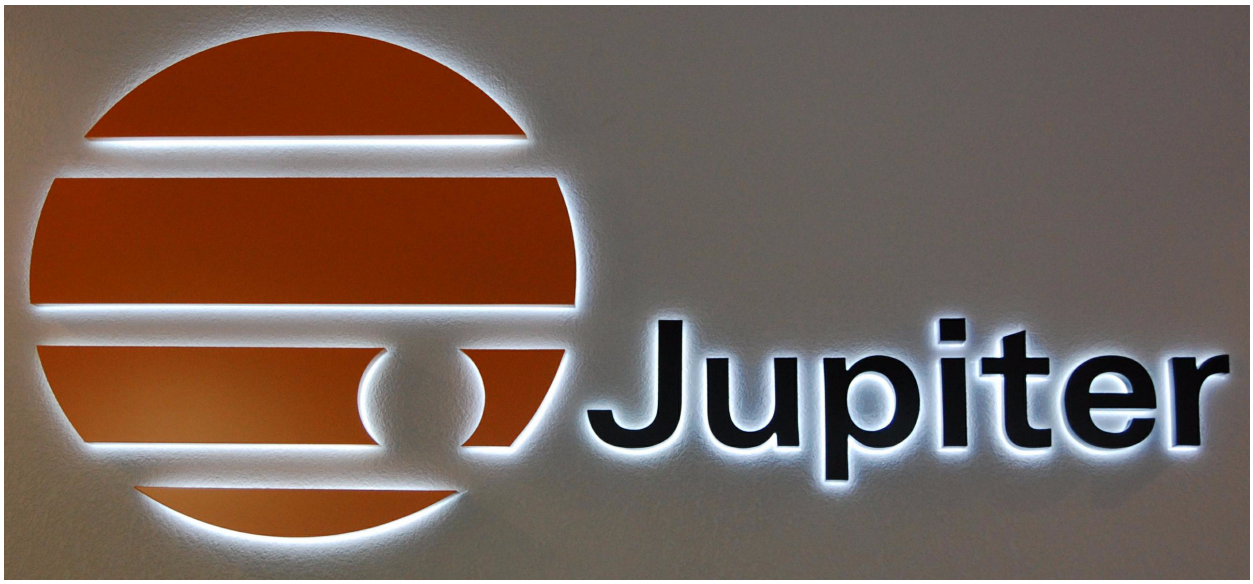
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